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ANTI-BACTERIAL PROPERTIES IN CHLOROPHYLL

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Chlorophyll preparations have been used in reducing or eliminating infections associated with ulcerative lesions. In villages juices from leaves and twigs of many plants are often used topically in healing up cuts and wounds. Recently Smith (1944) has shown that chlorophyll acts to produce an unfavourable environment for bacterial growth. In view of these facts an investigation on the anti-bacterial properties of chlorophyll was taken up. Extracts of chlorophyll were obtained from three plants, *viz.*, *Tagetes patula* Linn, (Beng.—Gandha), *Argemone mexicana* Linn. (Beng.—Shialkanta), and *Achyranthes aspera* Linn. (Beng.—Apang).

METHOD OF EXTRACTION

A known amount (80 gms.) of fresh leaves was carefully washed in water and then put into a one litre flask containing 200 c.c. of 90 per cent alcohol. The flask containing the leaves was then kept in a boiling water-bath for 2 to 3 hours. By this time extraction of chlorophyll was nearly complete. A deep blue-green solution (100 c.c.) with a red fluorescence was obtained which contained all the pigments from the leaf. The alcohol extract thus secured was then poured into a separating funnel containing 100 c.c. of ether. 200 c.c. of distilled water was added slowly, this being poured gently down the side of the funnel. In the course of a few minutes the ether layer separated and contained the green pigments. The lower layer, which was slightly green, was run off. The addition of distilled water and subsequent removal of the lower layer was repeated about four times, in order to remove the alcohol completely from the ether layer containing the chlorophyll.

The green and yellow pigments were next separated by the following procedure: The ether layer was treated with alcoholic caustic soda (2 gm. Na OH in 25 c.c. alcohol). The total solution was then saponified for 18-20 hours, by this time saponification was complete. Two layers, yellow and green, became separated. Water (about 100 c.c.) was added for complete separation. The lower green aqueous layer was collected and slowly concentrated on a steam-bath to 80 c.c. The solution contained water soluble chlorophyll, it was highly alkaline. The pH of the solution was adjusted to about 7·6-7·8. In order to free it from contaminants the solution was filtered through a candle. The sterile solution (volume 80 c.c.) was kept in the refrigerator. The total chlorophyll (solid) content of this solution was found to be 0·1 per cent approximately.

ANTI-BACTERIAL TESTS

Bacteriostatic activity of the chlorophyll solutions against *Staphylococcus aureus* and *Streptococcus hæmolyticus* was studied, using beef infusion broth as the medium and inoculum of about 1000 organisms per c.c. and 24 hours incubation at 37°C. Results are noted in Table I below.

TABLE I

Chlcorophyll	*Staphylo aureus* Dilution				*Strepto hæmolyticus* Dilution				
	1:10	1:20	1:40	1:80	1:10	1:20	1:40	1:80	1:160
Tagetes patula	+	+	+	—	+	+	+	+	—
Argemone Mexicana	+	+	+	—	+	+	+	+	—
Achyranthes aspera	+	+	+	—	+	+	+	+	—

+ indicates bacteriostasis. —indicates no bacteriostasis.

Using chlorophyll solution from *Achyranthes aspera* a zone of 13 mm. diameter was obtained by the agar-cup method on a plate culture of *Staphylococcus aureus*. By concentrating the same solution to half its volume, its bacteriostatic effect on *Staphylococcus aureus* was found to increase upto 1: 80 dilution.

FACTOR CONCERNED IN THE BACTERIOSTATIC EFFECT

Attempts were then made to find out the factor in the aqueous extract actually concerned in anti-bacterial action. A few cubic centimetres of the chlorophyll solution was taken and N HCl was added to it drop by drop. At pH 3·8 complete precipitation of chlorophyll resulted. This sample was filtered, and the precipitate was kept for further work; the filtrate was used in bacteriostatic trials. The filtrate was found ineffective in stopping growth of *Staphylococcus aureus*. No precipitation was observed when the solution was treated with Mayer's reagent or phospho-tungstic acid. It did not react even with Reinecke acid indicating thereby the absence of any basic substance in the filtrate. The precipitate (containing chlorophyll) obtained at pH 3·8, was redissolved in N NaOH solution and the pH of the solution was adjusted to 7·8. By the dilution method activity was again noticed to be upto 1:80. The activity of the crude original extract, therefore, seems to be due to the presence of chlorophyll.

In view of its definite bacteriostatic activity these solutions are being incorporated with other adjuvants suitable for local application. Its effect on regeneration of epithelial tissues is also being followed up.

Summary

Anti-bacterial activity of chlorophyll solution from three plants (*Tagetes patula* Linn., *Argemone mexicana* Linn., and *Achyranthes aspera* Linn.) was studied. All three samples were found to exhibit bacteriostatic effect on *Staphylococcus aureus* upto 1:40 dilution. These also inhibited the growth of *Streptococcus hæmolyticus* upto 1:80 dilution. The effect of applying these solutions in suitable form to abrasions and wounds is being followed.

Acknowledgment

The authors are indebted to Dr. U. P. Basu, D.Sc., P.R.S., for encouragement and suggestions.

Reference

Smith, L. W.—*Am. J. M. Sc.*, **207**:647, 1944.

(*Concluded from page 364, col. 1*)

22-3-44—Swelling fluctuating—incised, one inch of the worm protruded wound round stick, urine—albumin nil. Injection of 2 per cent S.A.T. 1 c.c. given I.V.(1).

24-3-44—Swelling reduced; worm protruding; S.A.T. 1 c.c. given I.V.(2).

26-3-44—No swelling; worm discharging; S.A.T. 1 c.c. given I.V.(3).

1-4-44—Worm broken during dressing.

2-4-44—Cellulitis of the whole left foot and left leg upto the knee—very tender, temperature 100°, inability to stand or walk—hot bath—sulphonamide tablets and mist. diaphoretic given. Also S.A.T. 1 c.c. I.V.(4).

4-4-44—Temperature normal, swelling + +, profuse discharge of pus from another opening near lateral malleolus—opening enlarged, ½ kidney trayful of pus drained, dressed with eusol. S.A.T. 1 c.c. given I.V.(5).

6-4-44—Slight swelling with pain, discharge of pus, patient able to walk, injection of S.A.T. repeated (6).

10-4-44—No swelling—no pain—discharge very little—patient walking.

16-4-44—He is still in the ward.

Case 5—Vaman, admitted on 7-4-44 for pain and had been previously suffering from guineaworm, left foot swollen greatly, red and tender, more on the dorsum—a small area on the lateral border soft and fluctuating, incised, broken worm extracted. Urine—albumin nil; injection of S.A.T. 1 c.c. given (1). Sulphonamide tablets 2 and mist. diaphoretic given and also warm bath.

9-4-44—S.A.T. 1 c.c. I.V.(2), swelling and pain less, pus +, temperature 100°.

11-4-44—Swelling localised to the dorsum of the foot—soft—incised—no worm—¼ kidney trayful of pus—temperature normal—S.A.T. 1 c.c. I.V.(3).

15-4-44—Swelling and pain disappeared—discharge of pus +.

GUINEAWORM*

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Guineaworm occurs plentifully in the Deccan, where stepwells, ponds and pools are the sources of drinking water. Generally there is drought and water scarcity in these parts. In the Madras Province the rainless zone of Cuddappah, Kurnool, Anantapur, Bellary districts, many parts of Mysore State, Salem District, Ramnad, Madura and Tinnevelly Districts, many tracts of Maharashtra and Karnatak in the Bombay Province are widely affected. These are the tracts of black-cottonsoil and "stone" disease too. If there is anything in this relationship it is not known.

The female worm is 30 to 120 cm. long and 0·5 to 1·5 mm. wide. The male worm is hardly even seen. The embryos are 0·5 to 0·75 mm. long and 0·15 mm. broad. The worm is occasionally seen under the skin like a whitish yellow coiled or crumpled thread sometimes moving too. The embryos can be seen under the microscope.

The embryos are cast into water and swim about actively and are swallowed by a fresh water crustacean cyclops which is their intermediate host.

The cyclops containing the guinea-worm larvæ is swallowed in drinking water by man, is digested by the HCl of the stomach and the larvæ are set free into the tissues of man, the definitive host. It takes about one year for the worm to develop fully and appear under the skin.

On attaining maturity, the worm makes for the legs and feet owing to its attraction for cold water. Its habitat is the connective tissue of the body—mostly of the lower limbs, but it may be found in any part of the body, and as men and women go into ponds, pools and stepwells to fetch drinking water in the tropics these sources get polluted. The general poverty and low sense of sanitation or absence of it, in these backward tracts, induce the people to make use of these easy, cheap sources of water in preference to costly draw-wells in the country parts. It is a common sight in these villages to see at least one member of the family with a month old rag of bandage on the lower limbs.

In Northern India water-carrying is done in leather bags on the back of *bhistis* and the guinea-worm comes to the surface among them on the back attracted by the cold water.

It secretes some toxins or ferments which destroy the tissues and help it to come out to the surface where cold water is in contact. This necrosis of tissues leads to bleb formation and then the skin bursts, the larvæ are extruded in a white milky fluid day after day. The mouth of the uterus is very near the head, and so the moment the skin is burst, the embryos are shed out in spasms from the worm. The cold water stimulates the spasms and helps the parturition. This process may take 3 to 4 weeks to complete. The action of the toxins gives rise to eosinophilia and to symptoms

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of anaphylaxis like urticaria, dyspnœa, vomiting, giddiness; there is slight fever and a sense of burning at the site of the blister, to relieve which the leg is dipped into cold water. When the blister ruptures the head of the worm is seen, sometimes even the uterus is seen protruding, very often the milky fluid of embryo comes out.

A few drops of cold water dropped on the skin hole leads to a spasm of the worm and extrusion of the fluid and of the worm. This is tied up on a small stick and wound round daily inch by inch after dropping cold water. This laborious process goes on for weeks and months. If there is no snapping of the worm in 3 to 4 weeks the whole parturition is completed and the worm comes out. But there is great likelihood that there are several other worms elsewhere in the body causing disability like this almost endlessly. If the worm breaks in the winding process intense burning pain, swelling, cellulitis, high fever, etc., follow immediately, and the man is down with acute suppuration. This severe suffering is due to the sudden absorption of the secretions of the worm into the surrounding and cellular and fascial planes to which pyococci of the skin add their own quota. With the hook on its tail, the worm holds on to the tissues and it is only when its uterus is fully cast out, that the hook lets go its hold and the worm fully comes out on pulling.

It is common to see men and women thrown out of work and laid down in bed with more or less suffering, brooding over their fate. Owing to infestation with worm after worm, pain and swelling, ill-health and unemployment are the serious results of this infestation, and this is a serious problem in the army nowadays—hospital beds are occupied, regimental work and the training are interrupted, finally invaliding is needed and many months of Government pay, etc., is wasted in many ways.

The village treatment of dropping cold water and winding the worm carefully round the stick is as old as the worm. But it is inefficient, disabling and wasteful. The sequelæ of this worm infestation are synovitis, arthritis, ankylosis, contractures of the tendo achillis and hamstring muscles etc. The ankle and the knee are the joints commonly affected.

Working as D.M.O. of Salem, I found the worm in a hernial sac, under the scalp, in the groin, behind knee-joint, and in the muscles of the trunk and thighs and perinephric region. It looks like a cold abscess when the worm is dead and is fully encapsuled—when it is opened, a dirty brown, glairy viscid fluid comes out lazily, and in it may be found remnants of the worm or the whole of it coiled and dead. The swelling is of course closely adherent all round to the neighbouring tissues. Differential diagnosis may be very puzzling, depending on its situation. All the swellings under the skin and under deep fasciæ have to be thought of in this connection. The treatment that I have found quite reliable and simple and prompt in its cure is intravenous injections of 1 c.c. of 2 per cent aqueous solution of sodium antimonium tartrate, every alternate day, on an average of 3 injections. Of course, it is a good precaution to take that there is no albumin in his urine before the injection is given. Relief is seen in 24 hours and complete cure in 7 days generally. This drug destroys all the worms and all the suffering and invalidism due to the periodic or simultaneous eruption of these worms.

My experience of antimonium tartrate therapy of Dracontiasis is quite contrary, I confess, to what Manson Bahr (1940) says in his Tropical Diseases. That is why I am bringing it up to your notice. There is an appreciable amount of unfitness and invalidism in the Army owing to this worm in those who come from the endemic area, and one officer of a Mahratta Regiment recently complained of the absurdity of this worm being allowed to cause so much disturbance to the training and efficiency of his men and pleaded for prophylaxis.

Therefore besides the above treatment I suggest the following prophylactic treatment:—

As for ankylostomiasis, T.A.B., tetanus, etc., so for the prevention of Dracontiasis among the troops who come from, or live and work in its endemic area, a course of three injections I.V. of 1 c.c. of 2 per cent sodium antimonium tartrate solution on alternate days, should be given as a routine by the Regimental or Unit M.O., to every one who joins the unit; and this fact must be entered in the men's Army Pay Book—64 M. This is the only reliable individual preventive measure. The other measures are:—(1) To supply protected water for drinking, (2) to prevent the men from drinking water from ponds or stepwells, or the stagnant sides of sluggish water-courses and (3) to boil the water, cool it and drink it if the source is likely to harbour cyclops and the area is endemic for guinea-worm—heating is said to be enough.

Here are five typical cases. One of them shows that urea stibamine is useless and sodium antimonium tartrate is curative. Another case shows simultaneous multiple infection similarly cured by this treatment.

My thanks are due to Lieut. Miss. L. M. Tellis, I.A.M.C., for collecting the attached case notes and to Lieut.-Colonel L. F. Brandenbourg, I.A.M.C., the O.C., Indian Military Hospital, Bangalore, for allowing me to make use of these notes.

Case Reports

Case 1—Palkani, admitted on 16-3-44 for pain and swelling right leg on the posterior aspect of the lower third of the right leg, discharging pus and blood since three days, gives a history of partial removal of worms from this spot, temperature normal—inability to walk—movements at right ankle and knee limited, urine nil.

18-3-44—1 c.c. of 2 per cent sol. of sodium antimonium tartrate given I.V.(1).

20-3-44—Swelling greatly reduced, no worm seen, still difficulty in walking, discharge of pus and blood reduced; pain also less. Repeated 1 c.c. of S.A.T. I.V(2).

22-3-44—Swelling almost gone, pain very slight, discharge nil, patient walking; repeated 1 c.c. S.A.T. (3).

26-3-44—No swelling, no pain, patient walking; ulcer healing.

27-3-44—Ulcer healed—patient discharged.

Case 2—Karupanna, admitted on 10-3-44 for pain and swelling of the upper part of the right leg, inability to stand, over 4 days' duration, no temperature, gives history of a worm being discharged from an opening on the proximal and medial aspect of the right leg—no worm seen on admission. Cold dressing applied.

15-3-44—Urine—albumin nil; condition worse; swelling more marked and patient in great pain.

18-3-44—Injection 1 c.c. S.A.T. 2 per cent sol. given I.V(1).

20-3-44—Swelling markedly reduced, pain less and ulcer present, still unable to walk. Injection S.A.T. 1 c.c. repeated (2).

22-3-44—Swelling almost gone, pain slight, ulcer healing, patient able to walk. Injection S.A.T. repeated (3).

26-3-44—Wound healed, no swelling, no pain, patient walking with ease.

27-3-44—Patient discharged.

Case 3—Adviappa from Bellary, admitted on 30-12-43 for multiple abscesses, since 1 week; one abscess on the right leg below the lateral malleolus, others on the left leg. All showing worms protruding. Dressed with cold dressing and cold baths given, worms wound round match sticks.

15-1-44—All worms completely extracted, patient complains of pain in the left thigh and inability to extend left leg, there are signs of inflammation but no pointing or fluctuation noticed.

22-1-44—No progress in the condition, urea stibamine injection given.

31-1-44—Pain continuing, no worm protruding.

15-2-44—Second injection of urea stibamine given —still no worm showing and no response.

18-2-44—Third injection of urea stibamine given —3 days later (21-2-44) a worm burst out just above the popliteal space on the left thigh—the worm was wound round.

29-2-44—Worm completely extracted, complaining of pain left leg and difficulty in walking.

The above notes are from the I. M. H., Bellary.

11-3-44—Admitted for swelling of the lower half of left leg with an ulcer on the outer aspect, temperature normal, cold dressing applied—worm protruding from the ulcer.

20-3-44—Injection 1 c.c. S.A.T. given I.V.(1), worm still protruding.

22-3-44—Swelling reduced, pain slight, no discharge, worm still coming out, S.A.T. 1 c.c. I.V.(2).

24-3-44—No swelling, no pain, worm still coming out. S.A.T. 1 c.c. given I.V.(3).

8-4-44—Entire worm came out—ulcer healing.

13-4-44—Ulcer healed, patient discharged.

3 Urea stibamine, and 3 sodium antimonium tartrate injections given. Urea stibamine proved useless while S.A.T. showed results promptly.

Case 4—Rosia, admitted on 19-3-44 for pain and swelling left ankle joint, since 5 days, gives a history of guineaworm infection of the right leg before—temperature normal, swelling on other medial malleolus, no ulcer—movements not restricted.

(*Concluded on page 362, col. 1*)

NEUROLOGICAL COMPLICATIONS OF TYPHOID FEVER

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The general concept of typhoid fever and its classical description being "An acute specific fever of about three or four weeks duration with a tendency to malaise, headache, diarrhœa and the 'typhoid state', often attended by crops of rose spots.....", makes us forget that neurological phenomena may occur as a direct result of this bacteræmic fever. That the central nervous system is affected is shown by the commonest symptom, delirium, which may or may not go into the classical typhoid state. These are, of course, purely due to toxæmia. The liberations of endotoxins by the destruction of organisms in the blood stream floods the central nervous system and benumbs it. Other constitutional signs and symptoms of a toxic state are also manifest. Thus, these are functional effects and therefore transitory. As the toxæmia clears up, so do the symptoms. Moreover, they are so common in the symptomatology that while they make the management difficult and the prognosis graver, they can hardly be classed as complications. Mental disturbances such as dementia, melancholia, mania and other functional sequelæ do not come in the scope of this paper where I wish to deal with organic lesions in the central nervous system consequent upon an attack of typhoid fever, as observed in my own series of cases.

MENINGITIS

Meningism, with some neck rigidity, a doubtful Kernig's sign and irritability, is present in a large number of cases and is undoubtedly a toxic effect with congestion of the meninges, but true typhoid meningitis is fortunately very rare. It have seen it only in one proven case.

Case 1—Male, aged 12 years, admitted on the 9th day of fever with temperature of 105°F., delirium marked, Widal T "O"+1/150, W.B.C. 7200/cmm. Some neck rigidity present. On the 16th day of fever he became deeply unconscious, neck rigidity was marked and Kernig's sign present. C.S.F. was under increased tension, seropurulent, contained pus cells, lymphocytes in preponderence, glucose nil, proteins 22 mgm. and chlorides 710 mgm. per cent. No growth on culture. Lumbar puncture done on the 18th day showed similar findings but this time B. typhosus was grown in culture. After each lumbar puncture his condition improved somewhat, but he died on the 20th day with hyperpyrexia.

ENCEPHALITIS

This too is very rarely seen. In my series I have collected only two cases, one of them accompanied by otitis media.

Case 2—Male, aged 20 years, student, Widal positive, had remission of temperature on the 22nd day. On the 27th day his temperature started going up again and he complained of earache on the left side. 29th day, the red bulging tympanic membrane

burst discharging a purulent fluid which on examination and culture revealed B. typhosus. 30th day, he complained of headache and rapidly became unconscious with epileptiform seizures starting on the right side and radiating all over the body. C.S.F. under great tension but it was clear, and apart from some slight increase in proteins there was no other abnormality found. The fundi showed bilateral papill-œdema. All signs of cerebral irritation were present and he died on the 34th day. Postmortem was not allowed.

Case 3—Female, aged 16 years, first seen 24th day of continued pyrexia. Clinical diagnosis confirmed by Widal T "O" & "H" + upto 1/150. 29th day she became unconscious with repeated epileptiform seizures. Temperature 105-106·6. All reflexes absent. W.B.C. 18000/cmm. Lumbar puncture revealed fluid under great pressure with similar laboratory findings as in the above case. After this, cisternal puncture was repeated daily with introduction of 40000 units of Penicillin. Her condition perceptively improved after each puncture, and after remission on the 41st day she fully recovered with no sequelæ or residual defect.

In this connection, I may mention the cases of polioencephalitis hæmorrhagica of Wernicke in typhoid reported by Dr. Chang and coworkers from Shanghai. They observed this condition in two cases of serologically positive typhoid, one during the febrile stage and one about a month after remission. Both were characterised by transverse nystagmus, increasing unconsciousness and contracted pupils. One case responded to massive vitamin B, the other died and autopsy confirmed the diagnosis. I have not seen such a case.

Pontine Haemorrhage

Case 4—A Bengali girl, aged 17 years, war evacuee from Assam, was admitted to hospital with 104°-105°F. temperature of 6 days' duration. (Her two younger sisters were also admitted with similar temperature of 9 days' and 5 days' duration). On admission she was very toxic and delirium was marked. Next day she had a severe epistaxis, became deeply unconscious with pin-point pupils and all reflexes were absent. Temperature remained roundabout 104°F. with a pulse rate of 96 p.m. There was no glycosuria. She died 12 hours later. Blood collected on day of admission gave a profuse growth of B. typhosus. C.S.F. under tension, contained frank blood. I may mention here that of the two younger sisters who were also admitted the same day, one developed hemiplegia on the 34th day of disease.

Case 5—I was called in consultation to see a woman aged 28 years. She had had fever for 3 weeks, Widal T "O" + 1/200, and that morning she had a severe epistaxis. Temperature 105°F., pulse rate 100 p.m. mentally slow, pupils pin-point, paresis of left VI nerve, all tendon jerks brisk, plantar indeterminate. C.S.F. not under increased tension and showed no significant abnormality. She was put on massive doses of vitamins C and K with sedatives and her condition slowly improved. 4 days later the pupils were no longer pin-point but still small and sluggish in reaction to light, there was a coarse tremor of the tongue and a perceptible hypertonus of the right arm and leg. There was remission of temperature on the 36th day and the patient made an uninterrupted recovery with no sequelae.

Hemiplegia

Hemiplegia occurs in connection with typhoid fever oftener than we think. I am sure quite an appreciable number of hemiplegias after an undiagnosed or unobserved fever may come into this group if properly investigated.

Case 6—Girl, aged 13 years, sister of case 4 who developed pontine hæmorrhage, was first seen by me on the 9th day of disease and admitted to hospital with a clinical diagnosis of typhoid fever. Temperature 103°-104°F., delirium present, Widal T "O" + 1/240. On the 14th day she developed severe petechial hæmorrhage all over the body. She was put on massive doses of vitamins C and K with intravenous calcium and glucose. W.B.C. 4000/cmm., Hb. 56 per cent, R.B.C. 2½ million, platelets 110000/cmm. Her general condition gradually improved and there was remission on the 28th day. Blood pressure at this stage was 88/60 mm. Hg. On 34th day, while convalescing satisfactorily she was suddenly found to have had a complete left-sided hemiplegia, obviously of thrombotic origin, with exaggerated tendon jerks, extensor plantar, absent abdominal reflexes with corresponding VII and XII nerve palsies. This was treated on general lines and she fully recovered, but even one year later when I saw her again she complained of stiffness in the left limbs with a consequent slight drag in her gait. Further follow-up was not possible as they left town.

Case 7—Girl, aged 9, was admitted to the children's ward with a clinical diagnosis of typhoid. Widal was positive for Para A "O" upto 1/150. On 15th day of disease she developed a spastic paresis of the right lower limb with knee and ankle clonus, extensor plantar, absent abdominal reflexes and only a slight hypertonicity of the right arm. There was remission of fever on the 28th day and with the exhibition of vitamins, massage and general tonics she made a complete recovery.

Case 8—Male, aged 30 years, admitted on 15th day of fever. Widal T "O" + 1/100. Remission on 21st day. Discharged 30th day. Next day became unconscious and was readmitted with a left hemiplegia. C.S.F. normal. Kahn and W.R. negative. Blood pressure 118/80 mm. Hg. General symptomatic treatment, vitamins and massage given, Discharged two months later, able to walk but with great hypertonicity of left limbs persisting.

Case 9—Male, aged 18 years, admitted to hospital with right-sided hemiplegia of 20 days' duration. History of undiagnosed fever lasting 45 days, during the latter part of which the hemiplegia appeared. Afebrile for 15 days before admission. Pulse rate 68 p.m. Blood pressure 86/55 mm. Hg. Kahn and W.R. negative after provocative dose of N.A.B. C.S.F. normal. Blood count showed moderate degree of anæmia and leucopenia. Widal T "O"+1/150, T

"H" + 1/200, no history of T.A.B. inoculation. He made a gradual recovery and was discharged after one month with a slight residual stiffness of the right leg.

Case 10—Male, aged 27 years. I was called in consultation for a left hemiplegia which had perceptibly and slowly developed in 24 hours. History of a 3 weeks fever which had been treated at his home in Muzaffarnagar as an enteric—(no Widal had been done)—and he had been convalescing for 17 days and was feeling quite normal again when this trouble started with a feeling of weakness and numbness of the left limbs and gradually during the night developed into the present condition of a left spastic hemiplegia with exaggerated tendon jerks, extensor plantar, absent abdominal reflexes and some weakness of face muscles. Temperature 97·6°F., pulse rate 60 p.m., blood pressure 90/68 mm. Hg. Urine normal. W.B.C. 3250/cmm. Kahn and W.R. negative. Widal Para A "O" and "H" + 1/150. No history of T.A.B. inoculation. Treated symptomatically and on vitamins and massage. After 3 weeks his condition was much better but spasticity of limbs persisted. Blood pressure 118/70 mm. Hg. Six months later I was called to his house to see another patient and he said he was quite normal except for some "weakness" in his left hand.

Aphasia

Aphasia occurred in one case in this series.

Case 11—Male, aged 33 years, admitted to hospital on the 12th day of fever in a delirious and highly toxic state. Widal T "O" + 1/240. Treated symptomatically, T.A.B. curative vaccine given from 15th day. He regained consciousness on the 20th day and had remission in the 4th week, but was left with aphasia and a doubtful paresis of the right arm. Cranial nerves normal. In 3 weeks he was speaking a few words again in a halting manner and after another week he was discharged, at his own request, with further improvement in his speech.

Transverse Myelitis

Transverse myelitis occurred in one very interesting private case with peripheral neuritis and nephritis.

Case 12—Male, aged 35 years. Fever started on 4-8-44.

16-8-44—Widal negative. Temperature 104°F. Pulse rate 90 p.m. B.P. 112/85 mm. Hg.

12-9-44—Temperature persisting. Widal T "O" + 1/100 "H" + 1/150.

16-9-44—Remission of temperature.

22-9-44—Temperature 104°F., with rigor.

Oliguria, urine contained albumin 0·3 per cent and red cells. W.B.C. 26,625/cmm. 85 per cent polymorphs. B.P. 230/140 mm. Hg. Discs showed tortuous vessels and cotton wool patches of exudate.

(2) Severe pain along course of right musculospiral nerve with tingling and hyperæsthesia.

With symptomatic treatment with sedatives, massive vitamin dosage and sulpha drugs, the neuritis and also the kidney condition improved. Urine output was better and contained only a trace of albumin. B.P. remained round about 220/130 mm. Hg.

15-10-44—Sudden paraplegia below the level of the 10th dorsal vertebra with a band of extreme hyperæsthesia at that level, with retention of urine and fæces. Temperature 97°-99°F., pulse rate 130 p.m. B.P. 210/120 mm. W.B.C. 29000/cmm. Kahn and W.R. negative. C.S.F. no abnormality. Urine contained trace of albumin, no casts or red cells.

Symptomatic treatment and penicillin in view of the high W.B.C. count exhibited.

29-10-44—After repeated courses of penicillin, temperature remained below normal, pulse rate 96-110 p.m. B.P. 195/110 mm. Hg. Urine contained only a trace of albumin. The band of hyperæsthesia was gone but the flaccid paraplegia of the lower limbs remained the same.

12-12-44—Started passing urine without catheter. Massage and faradic stimulation of muscles continued.

25-10-45—He can move about a little with help. Massage continued. Urine is normal, but B.P. remains round about 190/110 mm. Hg.

Peripheral Neuritis

Apart from the above case where the brachial neuritis appeared as a most painful and distressing complication, I have seen it happen in a large number of cases affecting various different peripheral nerves, either during the febrile stage or as a sequel. V and VIII cranial nerves are also commonly affected showing as severe trigeminal neuralgias or deafness. I have heard it being said that optic neuritis also occurs in typhoid. I have watched for it and I have never found one. This leads me to make the observation that if optic neuritis is seen in a case of typhoid, its cause should be looked for elsewhere.

Conclusion

It is abundantly clear from the cases cited above that every possible neurological syndrome can occur as a complication of the enteric group of fevers. Attempts have been made to explain their occurence in terms of neurotropic strains—that certain strains of organisms have a special tendency to attack the nervous system as a site of election. To my mind, there is nothing to support this hypothesis and the explanation is easy to find if one looks into the basic pathology of enteric fevers where one is struck by the predominance of vascular changes all over the body. There is no doubt that an arteritis occurs, either generalised or in localised areas. The typhoid ulcers in the bowel are caused by necrosis which is also "in part ischæmic in origin due to excessive accumulation of mononuclear phagocytes". In the spleen again, one finds areas of necrosis and intense congestion, which as Mallory has suggested is "produced by occlusion of splenic veins by masses of phagocytic reticuloendothelial cells bound together by fibrin to form thrombi". Femoral or saphenous thrombophlebitis is not uncommon in connection with typhoid. Zenker's degeneration in the muscles, though partly of toxic origin is probably in part the result of arterial or venous block and ischæmia. The heart is dilated and soft, the blood pressure is

low, the blood volume is low and there is usually anæmia and leucopenia of varying degree. All these factors put together strongly predispose to the occurrence of vascular 'accidents' in all tissues. The same predisposing conditions that obtain in any case of non-hypertensive cerebral vascular accident are also present here. The same type of occlusive arteritis, venous thrombosis and resulting ischæmia are seen here. Thus, from the viewpoint of morbid anatomy, the causation of the cases I have described of hemiplegia, aphasia, hæmorrhage or transverse myelitis, is exactly the same as any other such case, whether syphilitic, arteriosclerotic or of any other aetiology.

There is no doubt that peripheral neuritis in typhoid is the result of toxæmia, anæmia and vitamin deficiency consequent upon the general tendency towards deprivation of fresh foods imposed upon an already devitalised patient. Thus, to some extent, this complication can be avoided.

I would mention that penicillin was used in cases no. 3 and 12 purely on empirical grounds in view of the high leucocytosis.

In closing I wish to emphasise the fact that these neurological complications do occur probably much more frequently than we think in connection with the typhoid group of fevers, and the recognition of this fact may reduce, in some measure at least, the number of neurological cases which we have to label with the somewhat disturbing and unsatisfying remark—"Aetiology Unknown".

(*Concluded from page 368*)

application to the intestinal ulcers and intestinal flora in the diarrhœas. The latter may be true to a small extent.

Before conclusion I must apologise to the reader for not going to the literature for my help on the topic in hand, as I feared it might fall in the academic rut and be not able to do full justice to my attempt of honestly and boldly recording my observations in my practice which I was prompted to do on reading V. Iswariah's article and the editorial comment on it in the August 1945 issue of the Journal of the Indian Medical Association.

(*Concluded from page 370, col. 1*)

hours and 1 after 8 days, having gone downhill all through the course. This patient had staphylococcus aureus in the stool. Sulphaguanidine had no effect on the staphylococcus aureus present in the stool of this case.

ACKNOWLEDGMENT

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REFERENCE

PANJA, G. AND GHOSH, S. K.—*Indian Med. Gaz.*, 78, 1943.

CLINICAL IMPRESSIONS ON SULPHA GROUP OF DRUGS IN BACTERIAL DIARRHOEAS

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It is interesting to note the controversial opinions of the different workers from different places of India and other parts of the world appearing in the medical press on the action of sulpha group of drugs in diarrhœas. I therefore take up the subject to relate a few of the facts observed by me since 1941 about this group of drugs in diarrhœas caused by bacteria with special reference to their relative toxicity

Being a practitioner in a mofussil town where there are practically no laboratory facilities, my experiences have been mainly clinical.

I have used sulphanilamide, sulphapyridine, sulphathiazole, sulphadiazine and sulphaguanidine in my practice. Use of nicotinic acid with these drugs has not been a constant feature, but alkalies were used mostly in the shape of sodium bicarbonate in almost all afebrile cases and sodium bicarbonate and citrates (mainly the potassiums salt) in febrile cases. I have administered these mainly in the shape of emulsions, but their use as powder form, to be suspended in water at time of ingestion, cannot be denied. At the very outset I must mention that I have never used serum although have tried saline and diet treatment in a limited number of cases in the year 1941. But so far I have never felt sorry for not having used sera in my cases.

The posology of sulpha group of drugs in my practice has been very variable and in conformity not with the dictates of the medical literature through press or through manufacturers' pamphlets, but with my own clinical acumen. The dosage for adults has varied from a maximum of one gramme every two hours for first twelve hours and then one gramme every four hours, to a minimum of three grammes in twenty-four hours. I have never prescribed more than one gramme per dose to be repeated more frequently than two hourly and this two hourly exhibition of my maximum dose has never been allowed to go on for more than twelve hours. This maximum limit has been determined mainly by my personal observations of toxic effects experienced in some cases even with much smaller dosage; moreover due to my successes with smaller dosages I have never felt any apparent need for exceeding that limit.

In case of infants and children I have seldom used doses below 0·0125 gm. and mostly used doses of 0·025 gm. upto the age of 4 years and from 4 to 12 years the dose has been varied upwards from 0·025 to 0·05 gm. The frequency of administration has made almost all the difference for age factor apart from the slight differences in the doses. On the whole children require doses higher than their calculated quota, but even then one has to be wary while exhibiting these double edged drugs to these little patients not because of any fear of acute toxic effects within the limits of doses used by me but because of the great vulnerability of their hepatic function, which gets

deteriorated by these drugs causing slow, secret but sure damage to the all important and delicate liver cells.

In determining the doses that a patient would require I have been guided mainly by (1) acuteness, severity and nature of the disease; (2) general condition, age and constitution of the patient and (3) the drug selected, doses being more heroic in the case of sulphathiazole, sulphadiazine and sulphaguanidine than in the cases of sulphanilamide and sulphapyridine.

Now dealing with the types of diarrhœas in which these 'sulpha' group of drugs have been tried or used I do not propose to limit my consideration to the bacillary dysenteries. The present controversy rests itself on the relative toxicity of these drugs which is supposed to be directly proportional to the absorbability of these from the intestinal tract after oral administration with the idea of attaining the greatest amount of their local bacteriostatic effect which in its turn is inversely proportional to their absorbability. Hence all the disease group of diarrhœs where infectious (bacterial) elements and where these 'sulpha' groups are supposed to be effective and have been tried must be considered together and then the classification should not be based on clinical lines but on pathological causes. Thus the following important types of diarrhœa, in addition to the bacillary dysenteries fall in the field of our present consideration.

All infective diarrhœas of infancy and childhood whether primarily of intestinal origin (excluding) dietetic diarrhœas) or secondary to the infection elsewhere, or some infective diarrhœas secondary to original dietetic diarrhœas; certain severe choleraic diarrhœas which manifest the symptom-complex of cholera with dehydration.

By toxic effects I mean intolerance developed by patients as manifested by headache, nausea and vomiting, weakness and giddiness, and rarely diarrhœa but quite frequently swelling of the feet without any other apparent cause. My cases never developed agranulocytosis except a slight leucopenia in certain cases. Keeping these symptoms in view I will proceed to tabulate the relative values of the 'sulpha' group of drugs as intestinal antiseptic, with respect to their efficacy and toxicity.

Drugs	*Beneficial effects towards the diarrhœas and accompanying symptoms*	*Beneficial effects specially in bacillary dysenteries*	*Toxic effects*
Sulphanilamide	+−−−	never used	+++−
Sulphapyridine	+++−	++−−	++++
Sulphathiazole	++++	++++	+−−−
Sulphadiazine	++++	++±	−−−−
Sulphaguanidine	++−−	+++−	++−−

Sulphaguanidine is supposed to possess high water solubility but it is least absorbed from the intestinal tract and that is why it has found a place in the treatment of intestinal infections. But my experience is that it is neither so effective in any type of diarrhœa as sulphathiazole and sulphadiazine nor so free from the risk of producing toxic effects. Of course, it is more effective than sulphapyridine in cases of bacillary dysenteries and less toxic too. Sulphthiazole and sulphadiazine would serve all the purposes and indications whether it is bacillary dysentery, primary bacterial diarrhœa, or other infective diarrhœas secondary to infections elsewhere in which last case sulphaguanidine is already supposed to be non-effective and sulphathiazole most suited as it deals both with the alimentary infection as well as the parenteral infection. In selecting these drugs one is guided by the field of activity, amount of effectiveness and freedom from toxicity. All these purposes are wonderfully served by sulphathiazole and sulphadiazine. Then I do not know why we should ever think of sulphaguanidine and sulphapyridine. We do sometimes think of sulphanilamides while considering the pocket of the patient, only where it is possible judging from the nature of the ailment or its causative organism.

The significance of one "plus" under toxic effects of sulphathiazole in the above table is only that I have seen certain cases not only in diarrhœas but also some other types of dieases—that on exhibition of the drug the patient develops swelling in the feet and occasionally in the hands and face with no evident cause —nothing wrong dectectable in the heart and urine, nor are the cases so desperately anæmic and I am more assured of its cause being sulphathiazole by the fact that the cessation of the drug seems to be sufficient to deal with that swelling. However I cannot explain the phenomenon.

Apart from other proofs of the toxicity of the sulphaguanidine observed by me I have got a personal tale to relate. I get the same effects of intolerance by taking 1 gm of sulphaguanidine as I get after a similar dose of Dagenan, whereas I can tolerate two such doses of sulphathiazole.

Now coming to efficacy, my observation is that the curative value of sulphaguanidine in the treatment of dysentery is almost equal to sulphathiazole and sulphadiazine, but a bit slower, and until we believe in the motto "slow and sure" I think that is another disadvantage of sulphaguanidine over sulphathiazole and sulphadiazine. Then again febrile cases respond more miraculously with sulphathiazole than with sulphaguanidine. Further in my opinion it is the use of sulphathiazole which mostly obviates the use of acute dysenteric sera, which will not be so commonly avoidable in the case of sulphaguanidine therapy. Many a time sulphathiazole has come to my rescue as a physician where sulphaguanidine has failed me.

From the above it will be clear that sulphaguanidine does manifest toxic effects and that is not possible without it being absorbed from the gut, and in my experience the paradoxical theory of high water solubility and low absorbability leading to low toxicity and high local bacteriostatic effect of sulphaguanidine falls flat. Further, sometimes I am driven to the conclusion that the very theory of a local bacteriostatic activity of these drugs in the intestinal canal in cases of diarrhœas is presumptive and well nigh wrong. These drugs seem to be displaying their activity mostly after absorption into circulation and not as a topical

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INFANTILE DIARRHOEA

A Study of Ten Cases

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In the months of August and September, 1945, there was an outbreak of cholera and acute gastro-enteritis in Agra. During that period 10 cases of infantile diarrhœa were admitted into the children's ward. A study was made of these cases.

Their ages varied from 5½ months to 4 years. Sex incidence showed preponderance in males (6 males and 4 females). 8 were Hindus, 1 was Muslim and 1 Christian. In each case the stool was cultured to isolate the infective organism, if any, except in one case. The bacteriological examination of the stools was done by one of us (G.K.T.). The technique of the stool culture was as follows:—

Technique—The specimens of stools were received in stool-culture bottles. The bottles contained 15 c.c. of 30 per cent glycerin in 0·6 per cent buffer salt—disodium monohydrogen phosphate to bring the pH to 8; phenol red was used as an indicator. About 7 to 8 c.c. of fæces (liquid) were placed into these bottles and were sent immediately for culture. The media used for culture as a routine were:—(*i*) D.E.C. plates of Panja and Ghosh (1943); (*ii*) McConkey's plate; and (*iii*) alkaline peptone water in tubes. These were incubated at 37°C. for 24 to 48 hours. Biochemical reactions and specific agglutination tests were employed to confirm the findings of primary cultures.

Case Reports

Case 1—S.F., 4 years, Muslim female. *Complaints*—diarrhœa and vomiting, duration 4 days (number of stools about 15 a day). *On examination*—moderately dehydrated, temperature normal, pulse 140 per minute with low volume and tension, and respiration 30 per minute. Other systems normal: *Stool*—greenish and culture showed streptococcus non-hæmolyticus. *Treatment*—Castor oil emulsion (containing 5 minims castor oil per drachm), one drachm t.d.s., cibazol ¼ tablet t.d.s., whey 2 ounces every 3 hours and plain water *ad lib* were given. The patient was cured and discharged after 4 days.

Case 2—J.O., 5½ months, Christian male. *Complaints*—diarrhœa and excessive thirst, duration 10 days (number of stools about 25 a day). *On examination*—moderately dehydrated, afebrile, pulse 148 per minute and respiration 34 per minute. *Clinical examination* revealed no abnormality in any system. *Stools* watery and culture showed streptococcus hæmolyticus. *Treatment*—Same as in case 1. The patient was cured and discharged after a fortnight.

Case 3—S., 8 months, Hindu female. *Complaints*—diarrhœa, duration 8 days (number of stools about 12 a day). *On examination*—not dehydrated, temperature 100·4°F., pulse 128 per minute and respiration 28 per minute. *Stools*—greenish and contained mucus; culture of stool showed streptococcus non-hæmolyticus. *Treatment*—same as in case 1. The patient was discharged cured after 5 days.

Case 4—S.P., 2½ years, Hindu male. *Complaints*—diarrhœa, duration 15 days (number of stools about 12 a day). *On examination*—severely dehydrated, afebrile, pulse 110 per minute with very low volume and tension, and respiration 24 per minute. No abnormality was detected in any system on clinical examination. *Stools*—watery with flakes of mucus, and on culture B. dysenteriae (Sonne) was isolated. *Treatment*—25 c.c.'s of 25 per cent glucose and 8 ounces of normal saline were injected slowly by the intravenous route. Sulphaguanidine tablets 1 every 4 hours and whey 2 ounces every 3 hours were given. The patient was discharged cured after 11 days.

Case 5—T., 10 months, Hindu male. *Complaints*—diarrhœa, duration 7 days (number of stools about 30 a day). *On examination*—severely dehydrated, temperature 101·4°F., pulse 142 per minute with low volume and tension and respiration 32 per minute, spleen palpable. Other systems normal. *Stools*—watery no pathogenic organism isolated by culture. *Treatment*—Castor oil emulsion 1 drachm t.d.s., sulphaguanidine tablets 3 per day, Dover's powder ¼ grain t.d.s., why feeds and plenty of plain water by mouth were given. The patient was discharged cured after 11 days.

Case 6—M., 1½ years, Hindu female. *Complaints*—diarrhœa, duration 4 months (number of stools about 10-15 a day). *On examination*—severely dehydrated, afebrile, pulse 110 per minute with very low volume and tension, and respiration 28 per minute. Tongue dry and heavily furred. Crepitations present at both lung bases. *Stools*—watery, and showed B. dysenteriae (Flexner) on culture. *Treatment*—Coramine ½ c.c. and atropine sulph 1/200 grain injected subcutaneously. Castor oil emulsion 1 drachm t.d.s., sulphaguanidine 1 tablet t.d.s., whey feeds and plenty of plain water were given. The patient died in the evening.

Case 7—R., 2 years, Hindu male. *Complaints*—diarrhœa, duration 1 month (number of stools about 15-20 a day). *On examination*—Severely dehydrated, temperature 100·F., pulse imperceptible and respiration 32 per minute. No abnormality detected in any system. *Stools*—greenish, and showed presence of staphylococcus aureus. *Treatment*—castor oil emulsion 1 drachm t.d.s., sulphaguanidine tablets 1 t.d.s., whey feeds, plain water by mouth *ad lib*, and subcutaneous injections of 6 ounces of normal saline s.o.s. The patient died after 8 days.

Case 8—R.K., 10 months. *Complaints*—diarrhœa with fever, duration 1½ months (number of stools about 10-15 a day). *On examination*—moderately dehydrated, temperature 100°F., pulse 136 per minute and respiration 38 per minute; tongue coated; crepitations heard at both lung bases. *Stools*—greenish, and showed presence of streptococcus non-hæmolyticus on culture. *Treatment*—castor oil emulsion 1 drachm t.d.s., cibazol ½ tablet t.d.s., plain water by mouth *ad lib*, brandy 3 minims every 6 hours and whey feeds were given. The diarrhœa was controlled but the

fever persisted. The patient was taken away by the relatives against medical advice.

Case 9—V., 8 months, Hindu male. *Complaints*—diarrhœa, duration 2 months (number of stools about 10 a day); vomiting, duration 10 days (number of vomits about 10 a day). *On examination*—Not dehydrated, temperature 101°F., pulse 120 and respiration 24 per minute. Coils of intestines visible. *Stools*—greenish, and showed streptococcus hæmolyticus on culture. *Treatment*—Bismuth carbonate 7 grains with Dover's powder ⅛ grain t.d.s., cibazol ½ tablet t.d.s., whey feeds and plain water *ad lib* were given. The patient was cured and discharged after 12 days.

Case 10—B., 2 years, Hindu male. *Complaints*—diarrhœa and fever, duration 1 day (number of stools about 15). *On examination*—acutely ill, temperature 104°F., pulse 160 per minute and respiration 60 per minute. Evidence of bronchitis present. *Stools*—watery; it could not be cultured. *Treatment*—Cibazol ½ tablet t.d.s. and castor oil emulsion 1 drachm t.d.s. were given. The patient died next day.

Conclusions

None of the patients was suffering from cholera. Six were suffering from acute diarrhœa and 4 from chronic diarrhœa. The bacteriology of the stools in the cases in tabulated below:

Bacterium	*In the number of cases*
Streptococcus non-hæmolyticus	3
Streptococcus hæmolyticus	2
B. dysenteriæ (Sonne)	1
B. dysenteriæ (Flexner)	1
Staphylococcus aureus	1
None	1
Could not be done	1
Total	10

The bacterial flora was inconstant. Bacteriology in the majority of the patients showed sterptococcal infection and in only 2 patients dystentery organisms were isolated. The dysentery organisms were isolated with the D.E.C. medium where a fair number of colonies grew while in McConkey's plate no growth occurred. It was concluded that D.E.C. medium is superior to McConkey's plate as regards the growth of dysentery organisms.

Six patients were cured, 3 died and one relieved. Vomiting was present in only 2 cases while it was absent in 8. From this observation it was concluded that the majority of them were suffering from enteritis and not gastroenteritis. Four cases showed no temperature in spite of the presence of infection as revealed by the culture of stools. It was probably due to the presence of dehydration. Five cases (50 per cent) showed greenish stools and the other 5 showed watery stools. Cibazol was used in 6 and sulphaguanidine was used in 4 cases in addition to other symptomatic treatments. Both were equally effective. Amongst the 3 deaths, 2 died within 24

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OPERATIVE TREATMENT OF SENILE CATARACT*

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Senile cataract being the commonest form of ocular disease is proposed to be the subject of discussion. The disease being the most important cause of curative loss of sight among the old in this province, a large number of surgeons do operations for its removal. The aim of all operators naturally is to achieve cent per cent success, yet there are failures. Exchange of views on the part of surgeons on the subject will therefore be helpful. The responsibility of opening the discussion today has been placed on me. The time at our disposal is too short and I think the best I can do is to narrate as briefly as possible the method that I follow, so that after listening to it those who are going to take part in the discussion to follow, may offer their criticisms and suggest improvements which their experience has taught them. I shall deal with the subject step by step starting with the selection of cases and ending with giving of glasses for correction of aphakia.

Selection of Cases

I consider patients with no conjunctival or lacrymal sepsis, who have clear cornea, normal anterior chamber, a pupil briskly reacting to light and not dilated, with tension neither raised nor low, and with good perception and projection of light as fit for extraction of cataract.

Treatment

Pre-operative treatment of the eye is needed in patients with sticky discharge from the eye, and treatment with insulin of those who are diabetic.

Half of 0·5 gm. tablet of sulphanilamide is given every 4th hour for 24 hours before the operation and continued for one week after it. The object is to prevent infection of operation wound.

I consider it a point of paramount importance to decide beforehand whether the case is fit for intracapsular extraction, or extraction by the capsulotomy method. I do intracapsular extraction in about 95 per cent of my cases, and extracapsular extraction (removing the lens from inside the capsule after capsulotomy) in the remaining 5 per cent; these latter are cases of cataract accompanied by such conditions as high myopia and prominent eyes and any attempt at intracapsular extraction in them is liable to do serious damage to the eye.

In cases suitable for capsulotomy, the pupil is dilated by putting in the eye a drop or two of one per cent solution of atropine one hour before operation.

Operation—I always do it with the patient lying on his back, on a table on which comfortable bedding has been spread.

* Opening Address at the Symposium on the subject held at the Scientific Section of the 22nd All-India Medical Conference held at Amritsar, Dec. 1945.

Anæsthesia—One drop of 2 per cent solution of pentocaine in the eye 3 to 4 times at one minute's interval gives perfect anæsthesia. I have never felt the need of injecting novocaine around the facial nerve branches. Deep anæsthesia of the eye is an essential requisite for successful extraction.

All instruments except the cutting ones are sterilized by boiling, and the cutting ones by keeping them in pure carbolic acid for several minutes and rinsing with boiling water before use.

I open the eye and introduce a light spring speculum to keep it open. The eye is then washed with a solution of 1 in 10,000 of perchloride of mercury —during this process the speculum with the lids is slightly lifted away from the eye-ball so as to ensure proper flushing of the fornices.

The excess of the lotion is removed by mopping with small swabs of absorbent cotton-wool wrapped round the ends of clean bamboo sticks; these swabs have previously been sterilized by boiling along with the instruments.

Corneal section is made with a Graefe knife which must be very sharp. The section, which is close to the corneo-scleral junction, involves a little more than 2/5th of the corneal circumference in its upper part. During the incision and subsequent steps of the operation an assistant removes the weight of the lids from the eyeball by keeping them pulled gently apart with the lengths of his thumbs placed over and parallel to the superior and inferior orbital margins.

The next step, in the case of intracapsular extraction, is a peripheral button-hole iridectomy in the uppermost part of the iris just behind the corneal incision. Iridectomy is not as a rule done in cases where decision in favour of capsulotomy has been arrived at; capsulotomy is performed during the incision itself by depressing slightly the point of the knife backward into the capsule as it is passing in front of the lens during its passage through the anterior chamber, thus making a large opening in the capsule.

Dislocation and delivery of the cataract—The lens is so dislocated that the part of it which first appears in the wound is almost invariably its lower margin. While the back of Smith's lens spoon held in the left hand is pressed gently over the operation wound to prevent it gaping, gentle pressure backward is applied just below the lowest part of corneo-scleral junction with the point of a strabismus hook held in the right hand. As a result the lower margin of the lens begins to rise steadily forward pushing the iris in front of it; this is followed upwards by the point of the hook. As the wound is reached its margins separate to give exit to the presenting lens margin. By this time the back of the spoon which was held over the wound has already been lifted. When half of the lens is outside the wound it is hooked out with the strabismus hook.

In all swollen cataracts Smith's technique of tumbling works out admirably.

Usually there is no mishap but occasionally the capsule may burst causing the cortical matter to escape as the nucleus is expelled. In such cases the cortical matter is removed with the aid of a strabismus hook as in ordinary capsulotomy cases, and very often the capsule can be pulled out with the iris forceps.

Reposition of the iris is carefully done with the iris repositor and a beautiful small circular pupil is then seen behind the centre of the cornea. One drop of ½ per cent eserine solution is then instilled in the eye followed by the introduction of about one grain of a mixture of one part of iodoform and 25 parts of sulphanilamide powder.

The speculum is then removed and the assistant withdraws his thumbs from the margins of the patient's orbit.

Good pads of absorbent cotton-wool are placed on both eyes and snugly held in position by three turns of spica bandage. The materials of the bandage is thin muslin.

The patient is then lifted from the table and transferred to his bed, still lying on his back—this position he must maintain for as long a time as he comfortably can but in no case for more than 8 hours, at the end of which he is allowed to turn on the side of the unoperated eye. He is kept lying in bed for 24 hours during which he uses bed-pan and urinal, and is fed on liquid diet with a spoon or a feeding cup. At the end of 24 hours he is made to sit up with a support behind his back and may sit as long and as often as he likes—he can now use a commode placed by the side of his bed but must not strain. If there is no motion for 48 hours after the operation a mild purgative is indicated.

Dressing—First dressing is done 72 to 96 hours after the operation. The exterior of the eye is gently cleaned with a swab of cotton-wool soaked in 1 in 10,000 solution of perchloride of mercury. The unoperated eye is also cleaned and the patient is asked to open both his eyes. The size and shape of the pupil and the wound itself are inspected. If the pupil is very small one drop of one per cent solution of atropine is instilled in the eye. Iodoform-sulphanilamide powder is placed on the everted lower lid, the eye is closed, covered with pads of cotton-wool and bandaged. If prolapse of iris is detected in the wound it is excised under chloroform on the operation table.

Second dressing is done 72 to 96 hours after the first by which time the wound has united, and is merely the removal of the bandage and its substitution by a green shade.

Further treatment consists in putting a small quantity of iodoform-sulphanilamide powder in the eye daily at bed-time for 2 weeks, keeping the pupil moderately dilated with occasional drops of atropine solution and washing the exterior of the eye gently 3 times a day with absorbent cotton-wool soaked in warm water. During these 2 weeks the patient must take utmost precaution to avoid hurting the eye lest he burst the wound.

Glasses are prescribed 6 weeks after the date of operation, and in all such cases where the patient's vocation calls for very keen eye-sight retinoscopy must

be done before testing with glasses. The vision in most cases comes up to 6/6 and J1. I have followed this technique for the last 4 or 5 years and am very satisfied with the results. This year in October 250 extractions were done in a camp helped by the Mahabir Dal of Ambala Cantonment with no failure.

Before I began using this technique infection of the operation wound and panophthalmitis used to occur in 2 to 4 per cent cases notwithstanding all the precautions that were taken, and in addition a number of cases developed non-suppurative iritis. These were the two usual causes of failure. But ever since the use of sulphanilamide internally and locally no such complications have arisen except in some patients who refused to take sulphanilamide internally; 2 such cases occurred at the Central Khalsa Hospital, Tarn Taran, this year out of a total of about 500 operations.

* * * * *

The following amongst others took part in the discussions that followed Dr. Sohan Singh's opening address:

Dr. L. N. Taneja (*Sargodha*) asked whether it was not advantageous to supplement pantocaine anaæsthesia of the eye with facial nerve block of the same side so as to eliminate the slightest possibility of the patient squeezing or screwing the eye during the operation.

Dr. S. N. Kaul (*Lahore*) raised a number of points:

He opined that not more than 55 per cent of all cataract cases were fit for intracapsular extraction. Some of the conditions mentioned by him as positive contra-indications for intracapsular extraction were high myopia, patients with only one eye, hypermature cataract, dislocated (subluxated) cataract, traumatic cataract, cataract in the young and very old people, raised or lowered intraocular tension, constitutional diseases and unusual nervousness on the part of the patient. In the face of these contraindications, he thought, it was unjustifiable to attempt intracapsular extraction in 95 per cent of all cataract cases.

He further stressed the need for making cultures of smears taken from the upper fornix—a region which had been known to harbour pneumococci in eyes which to all appearances seemed perfectly free from any conjunctival inflammation; preoperative treatment of the eye deduced from and based on culture findings was therefore necessary to eliminate this source of danger.

Dr. Chhibar (*N. W. F. P.*) said that he had seen many cases in his part of the country which developed progressive loss of sight extending over several years consequent upon intracapsular extraction. This, in his opinion, was due to the elimination of the lens capsule which normally offered protection to the retina against deleterious effect of infra-red rays. Moreover, in those cases, he had noticed bits of healed iris tissue in corneal scars—a condition which could have been prevented by the capsulotomy operation.

Dr. Shroff (*Bombay*) said that he was making extensive use of sulphonamides for some years in all cases of cataract extraction both locally and internally, and had found them very reliable preventives of post-operative infection.

* * * * *

In winding up the discussion Dr. Sohan Singh said that in his own practice he had not found it necessary to do facial nerve block in addition to anæsthetising the eye with 2 per cent solution of pantocaine, but he saw no objection to the use of the former as an addition to remove all nervousness on the part of the operator. Touching on the points raised by Dr. Kaul, he said that he was in perfect agreement with him regarding some of the conditions mentioned as contra-indications for intracapsular extraction. The points of agreement had been mentioned in the opening speech. He further agreed that the cataract of the young was not suitable for intracapsular extraction. As regards hypermature cataract he pointed out that there were two types, namely, the swollen type (Morgagnian) which could be very easily removed in capsule without any danger to the eye by Smith's original technique of tumbling, and the shrunken atrophic type (consisting of thin transparent capsule closely enclosing the tiny nucleus) in which capsulotomy could not be performed and must be removed in capsule. In case of subluxated cataract, he said, the question of capsulotomy did not arise as the entire cataract must be removed with the spoon. In cases of traumatic cataracts the question of intracapsular extraction did not arise because the cause of the disease in most of them is injury to the capsule which is ruptured by the trauma. In patients with only one eye, he said, intracapsular extraction was all the more desirable as it reduced to the minimum the possibility of a number of complications and subsequent surgical intervention. Experience had convinced him that intracapsular extraction was definitely the better of the two operations. The only justifiable ground for a surgeon's decision against intracapsular extraction in such cases was the doubt in his mind whether he would be able to do it successfully. Coming to cases with raised or lowered intraocular tension the speaker emphasised that those were not fit for any extraction so long as their tension was not brought to normal. He further observed that constitutional diseases themselves were no bar to intracapsular extraction, but certainly needed to be brought under reasonable control before operation.

Regarding the practice of making cultures of conjunctival smears as the basis of pre-operative treatment of the conjunctival *cul-de-sac,* the speaker believed that it was rendered unnecessary by the pre- and post-operative use of sulphonamides—internally during the period for which the eye was kept bandaged, coupled with their local application to the eye after operation till the wound had soundly healed; results achieved by him had conclusively established that. He pointed out that it was the nasal passages which constituted the pneumococcal reservoir from where the micro-organism travelled to the conjunctival sac *via* the lacrymal passages, and so long as those channels of communication remained unsealed there was no certainty of keeping the eye free from it. The use of

(Concluded on page 377, col. 2)

SPECIAL ARTICLE

A DIFFERENT APPROACH TO THE TEACHING OF PRACTICAL MEDICINE TO THE JUNIOR STUDENTS

S. M. GHOSAL, M.B., M.R.C.P. (LOND.)

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If an experienced clinician is observed critically while he is taking up case after case, either at the hospital out-patients' department or in his private practice, it is found as a rule, that after taking the history he takes up the examination of his patient. This examination in most of the cases, involves taking up of the items of the physical signs one by one in an orderly sequence. When he comes across an abnormality he goes deeper or wider in regard to that abnormal physical sign and subsequently returns to where he had left and persues the thread of his routine examination. On this plan he usually begins with the hands and ends with the blood pressure. While he is taking the history he also takes note of any prominent features or alterations in the general appearance of the patient. During or after his examination of the patient, the clinician often goes back to the history with the object of gathering more information on certain points or of corroborating others.

After collecting all the data in the way of relevant history and physical signs, he calls for the results of any laboratory investigation which may be available. At this stage he usually makes a provisional clinical diagnosis in his own mind. Whether he pronounces his diagnosis or not, is quite immaterial. He may then suggest certain investigations to enable him to come to a final diagnosis.

The instruction which is usually imparted to the student who is a new comer to the clinical course, follows a line very different to the one described above. The student is taught by the text books on clinical medicine as well as by his teacher to examine the patient system by system. But when a beginner is given a case for examination he does not know where to begin and how to proceed. Even if he knows which system he should begin with, he does not know which abnormality he should look for.

In the scheme of teaching which is being proposed here the new entrant to the clinical course is given a printed Medical Case Sheet consisting of four pages.*

The first page is meant for recording the disease studied, the name of the student and of the physician under whom he received the instruction.

The second page is all important to him. The student now takes the history of the case as best as he can, under the possible guidance of his teacher. He is however required not to make any entries regarding the history on the Medical Case Sheet at this stage for reasons mentioned later on in this paper. Having recorded the nature of the patient and other details as under "INTRODUCTION" he takes up the routine examination in the order indicated on the printed sheet. It will be noted that the points to be observed are arranged in a definite order and that each point bears a certain number. Under the heading "PRELIMINARY OBSERVATION" there are 12 items. If the student finds any signs under these 12 heads which denote abnormality, he is instructed to put a circle round the number preceding the item concerned and also make simple entries where space is provided for. If the patient shows no abnormality regarding a particular item the student simply skips over that item without any mark. He thus proceeds to examine the patient regionally beginning with the hands, progressing up the arms, examining the head, neck, chest, abdomen and finally finishing up with the knee jerks and the blood pressure.

The case sheet offers the student certain definite advantages. Firstly he does not need to tax his memory for learning up the possible physical signs of the different systems. They are there before him in print. Secondly, putting a circle round a numeral is much easier and quicker than writing down the physical sign in a note book and it also reduces the clerical work to a considerable extent. The modern student, who has a tendency to find out short cuts for learning things, is satisfied with this quick method. At the same time the efficiency of his work is increased. Thirdly, having to work day after day in this systematic manner he acquires the habit of being methodical. By the time he had taken up say, 50 or 60 cases in the same manner he will have the systematised method of work ingrained in him and he will have learnt to examine cases without missing a single important point. After all, this will have to be the system which he will follow when he becomes an experienced clinician himself then why not teach him the same technique from the very start?

The importance of numbering the items on the second page of the case sheet is firstly, that it helps the beginner to remember the points without much effort. Secondly, it will probably make the transference from the second page to the third easier and more methodical. Thirdly, the numbers may easily be utilised for punching out cards with a calculating machine and subsequently those cards may be used for the purpose of sorting for statistical work or calculation at a future date. It will be neither waste of energy nor of time if the young student is shown how these statistical investigations are carried out and how invaluable the data on the history sheets are, for the purpose of investigation and research work. It should always be borne in mind that without research and investigation work, teaching of medical subjects is utterly inefficient and incomplete.

After the student had dealt with all the 83 items on the second page, his work commences on the third page which is the page of diagnosis.

The student is encouraged to make his clinical diagnosis however imperfect it may be, from the very earliest stage of his clinical career. For this diagnosis he first sifts the history which he has taken before the commencement of the examination or even during it, and discards the many non-essentials and puts down the relevant points only in short phrases or words.

* The Medical Case Sheet has been reproduced as Appendix to this article. The blanks in the original provided for entries have, however, been minimised or even discarded in places for space economy.—ED., *J. Indian M. A.*

A few words will not be out of place regarding the RELEVANT HISTORY. History taking is the most difficult item in practical medicine. The power of taking a good history improves with theoretical knowledge and experience and needs time to develop. The teacher should, in the early stages, give the student all assistance and even the actual questionnaire. This must, of necessity, vary from disease to disease and from case to case. The subject of history taking being a more advanced subject has been intentionally left out of the scope of the case sheet.

Next the student transfers the clinical findings from the second page to the third. He takes the items on the second page serially, and puts them down in words under the appropriate system on the third page and ticks off the circle on the second page as having been dealt with. By this method he develops the habit of classifying and analysing the physical signs and he learns to note his observations system by system.

Having noted down the relevant points in the history the positive physical signs, as also the negative signs where necessary, the student should be encouraged to apply his mind and arrive at a diagnosis on the spot on the basis of the points in the history and of his clinical findings.

The importance of clinical diagnosis is indeed very great. In our country efficient laboratories, x-ray plants, and other facilities for investigations are extremely meagre in proportion to the number of sick and to the number of doctors who give them relief. In the vast majority of towns and in the entire rural areas the practising doctor has got to rely on his clinical sense alone. It may take another century before the remotest village will have the facility of a well-equipped pathological and bacteriological laboratory, and x-ray and electrocardiographic apparatus. Since at present a very large section of our practitioners have to do without the help of these laboratories and appliances, the medical student should be taught to rely on the two essential data—the history of the case and the clinical findings—for arriving at a diagnosis. This naturally means that he should be taught to go into the history with thoroughness, to look for more and more physical signs and to elicit them with precision.

It is by no means suggested that the student should be taught to under-estimate the value of specified diagnostic methods. On the contrary it should be impressed on his mind that during the stage of learning, all available specialised methods of diagnosis must be adopted at every step so that the clinical diagnosis may be checked up, mistakes corrected and further light thrown on the intricacies of the case being studied.

If this practice of making the clinical diagnosis is repeated day after day it may be expected that the student will steadily gain in self-confidence and that his margin of error will also be progressively reduced. It has been observed by the writer that at least a section of the students do learn to make a correct clinical diagnosis in a certain proportion of cases, as is confined later by the results of laboratory investigations. Another point is that there are occasions when even highly specialised techniques fail to lead to a correct diagnosis. This, the student learns in course of the follow-up treatment and the postmortems etc. The student should therefore be taught not only the importance of specialised techniques but also their limitations. When we are teaching the student our belief is it not fair to teach him our disbeliefs as well?

There is yet another advantage of this transference of data from the second page to the third and of the building up of the diagnosis on the strength of the history and the physical signs. Two students working on two different typical cases may be asked to fill up page two and the history portion of page three in their respective case sheets and then exchange their sheets. The students are then instructed to transfer the items from page two to page three, to take into account the points in the relevant history and in the routine physical examination and to make the diagnosis on the basis of the facts available on record. By this method a student learns to use his analytical mind and diagnose cases on the strength of the available data, and not to rely on mere intuition after looking at the patient. Secondly, if he fails to come to a diagnosis due to the paucity of data supplied by his colleague on the case sheet, he learns to look for and collect more data in his turn, while filling up his own sheet.

Another point must be stressed. There is a tendency among many a clinician to obtain all possible data before pronouncing the diagnosis. He must have the positive sputum report to declare pulmonary tuberculosis, he must obtain the radiogram to say that it is a case of bilateral cavity, he must know the sedimentation rate to make up his mind that the case is not progressing favourably and he must have the electrocardiogram to decide that it is auricular fibrillation and that digitalis is indicated. In other words the clinician wants the laboratory man to make the diagnosis for him. This is all right for hospital work or for research and investigation work where a clinical diagnosis must be supported by other proofs. But in general practice the laboratory should be used when the laboratory is the only guide or when it is necessary to check up the clinician's diagnosis, and not for the purpose of supplying him with a ready made diagnosis.

After he has made his clinical diagnosis and entered the same on the sheet the student should bear in mind the fact that there may be a second or a third disease which may give rise to the condition under observation. Two or at the most three such diseases should be put down as OTHER POSSIBILITIES. No useful purpose is served by first entering a long list of diseases under the head "differential diagnosis" and then ruling them out one after the other on very obvious grounds.

Having made the clinical diagnosis and having entered the "other possibilities", one should call a halt. Further study of the cases should await the results of various investigations. In a teaching institution these investigations, as a rule, should be as elaborate and as complete as possible. As progress is made in regard to investigation the third page will be filled up by the student. When all investigations are over

the final and complete diagnosis ought to be made. There may be occasions when this final diagnosis will be made only at the postmortem table or later still, under the microscope in the morbid histology room. Thus an apparently correct diagnosis of typhoid fever may ultimately prove to be a case of acute miliary tuberculosis and a case of undiagnosed coma in a young subject may prove to be due to round worm infestation. Such upsets of clinical diagnosis at the higher tribunal of the post-mortem room are hard but invaluable land marks in the training not only of the student but also of his teacher. Furthermore there will be occasions again and again when a clinical diagnosis cannot be arrived at. That should not discourage or deter the teacher or the student from making an effort to diagnose in every case.

The third page is also the page of PROGNOSIS. As a rule a student in the early stages of his medical career is not taught the importance of prognostication. This serves no useful purpose. Opinion regarding the prognosis in a case is based on knowledge of statistical findings and on experience of other cases on the one hand and assessment of certain clinical data of the particular case on the other. The margin of error in this act of prediction can be materially reduced by encouraging the practice of giving out prognosis. At the stage of training it is always better to commit than to omit. The student should be made to fill up all the four items under "prognosis" however wide of the mark his opinion may be. Thus when he has given his prognosis in writing in a hundred cases and has checked up his opinion with final result, his guess work will have some value in the case No. 101. His study for six months in the in-patients' department and for three months in the out-patients' should have brought him in close contact with a very large number of cases. He should be encouraged to make out his prognosis in writing as often as he is offered a chance.

The fourth page is devoted to treatment. Certain items are put down as the first essentials. They deal mostly with the psychological aspect of the patient. When the student takes up a case he should realise that he has certain obligations towards the patient and that he alone can fulfil them. First he should assure the patient that he (the student) is there to help him in every possible way. The patient should be made to feel that he is not lonely in the hospital even though he may not be personally known to anybody. This sense of forlornness which most of the patient are apt to feel should be removed. This can only be done if the student forms a mental contact with the patient. The attitude of casualness and indifference which the medical student is inclined to adopt towards a hospital patient should be studiously changed to one of personal concern and deep interest. This needs training. The student should be taught the phrases which are suitable the words which carry sympathy and understanding.

The next item among the essentials is to encourage the patient to bear up with the suffering and to follow the instructions of the physician whole-heartedly. Here again the student should be taught to use the language which carries conviction. Having dealt so far in his pre-clinical course with laboratory articles and dead subjects only, the student may have only a very vague idea about the manner of talking to his suffering fellowmen. He should therefore be taught in every case which he takes up to practise and improve his language and behaviour towards patients.

Having allayed most of the anxieties and appre hensions of the patient, and having thus forged a strong bond of sympathy with him, the student is in a position to turn his attention to treatment both prophylactic and curative. The importance of preventive treatment has been specially stressed here. Many contagious diseases are preventable. With out present knowledge and methods of prophylaxis small pox, enteric fever, cholera, etc. are entirely avoidable in middle class families. Why then should it not be done? Is it not common knowledge that one death due to enteric fever has often been followed by other attacks and deaths in the same family, only because the prophylactic dose of T.A.B. had not been insisted upon? It is high time that active immunisation was practised in all such cases and the old idea of being content with the advice "be careful" entirely discarded.

In curative treatment stress has been laid on the general management of the case. It is felt that the lay public has not yet learnt the full value of fresh air and of the proper amount of water intake in the treatment of most diseases. The doctor has to take a veritable tirade against old incorrect and harmful beliefs such as "sponging will cause pneumonia", "fresh air will invite cold in the chest" and "free water intake will produce a distended abdomen". Even among the intelligentia in our country, particularly among the women folk who rule the inner circle of the home, old beliefs have grown deep roots which are not easily or quickly removed. It is imperative, therefore that the young student should be repeatedly warned against such superstitions and taught to carry on a crusade against them.

Though the space on page four of the case sheet is limited, yet a good deal of information and details of treatment can be entered therein. Practice in entering details on this page will give the student the habit of writing out treatment methodically and with some degree of completeness. There is yet another advantage. Since the student is expected to preserve these case sheets as permanent document in later life when he goes out into practice, away from his hospital and with no ready access to consultants, these case sheets will be of immense help to him in supplying him with many details which even a text book will often fail to do. The text book is compact and impersonal. The case sheets on the other hand, being a record of his own cases will ever remain like live patients before him.

CONCLUSION

This medical case sheet is by no means either a complete table of symptomatology or a short cut to learning medicine. For instance, it offers practically no scope to one who is studying Addison's disease or chorea. Further as has been stated in the medical case sheet itself, this sheet does not deal with the case taking of babies and of neurological cases for which separate sheets must be consulted.

The medical case sheet presents a method to the junior student, the new entrant to clinical medicine. The usual experience of such a student is, that he faces what appears to him like a sea of cases and he does not know where to begin and how to proceed. This results in a mental escape which is expressed in different ways mostly ending in loss of interest. With the case sheet in hand he has a tangible and definite guide which gives him a working plan and thereby stimulates his interest in his new work. This stimulation of interest is considered to be its most important feature. How the foundation of his clinical course is laid, is very vital. If he starts with a method which not only holds his interest for the time being but which will be the method of his choice for the rest of his career he will have started his work well.

It is frankly admitted that there is scope for many additions and alterations in this scheme, depending upon the likes and dislikes and also upon the special interest of the teacher concerned. Let those additions and alterations be made by all means. What is emphasized here is that such a scheme is helpful to the students and opens out a new and interesting approach to the teaching of practical medicine.

For over fifteen years this method in its fundamentals, has been followed by the writer in the teaching of medicine in the Prince of Wales Medical College, Patna and the result has been uniformly satisfactory.

APPENDIX

Medical Case Sheet

Physician Disease Patient Studied by Date

ONLY AFTER THE HISTORY HAS BEEN TAKEN

Routine Clinical Examination

(For neurological cases and babies see special case sheet)

Introduction

Name age
sex M F Religion un married non vegetarian
occupation address for follow up

Preliminary Observation

1 not apparently healthy 2 wasting 3 seriously ill 4 toxæmic 5 dyspnea 6 pallor 7 cyanosis 8 jaundice 9 œdema 10 anasarca 11 ascites 12 skin eruption

Regional Examination

Upper Limbs:

Fingers 13 pallor 14 cyanosis 15 clubbing, Pulse 16 rate 17 rhythm 18 volume both R and L Arm 19 epitrochlear gland R L

Head Face and Mouth Cavity:

Hair 20 soft and glossy, Skin 21 smooth and elastic, Eyes 22 pallor in conjunctiva 23 jaundice 24 pupils equal reacting equally, Ears 25 aural discharge R L, Nose 26 nasal discharge R L, Lips 27 pallor 28 cyanosis, Gums 29 pyorrhœa, Teeth 30 caries, Tongue 31 moist and clean 32 pigmented, Tonsils 33 enlarged or inflamed, Throat 34 congested veins prominent

Neck:

Inspection 35 engorged veins R L 36 pulsation arterial venous R L 37 enlarged lymph glands R L 38 enlarged thyroid

Palpation 39 enlarged glands character

Precordium for the Heart and Vessels (mitral pulmonary aortic and tricuspid areas):

Inspection Apex beat 40 not localised 41 displaced 42 not seen 43 epigastric pulsation

Palpation Apex beat 44 not localised 45 displaced 46 not felt 47 thrill systolic diastolic presystolic 48 expansile pulsation

Percussion 49 dullness suggesting pericardial effusion aneurysm pleural effusion area 50 resonance suggesting emphysema area

(percussion for locating the borders of the heart is obsolete)

Auscultation

51M	first sound, character	52M	replaced by murmur
53M	second sound, character	54M	replaced by murmur
55M	murmur heard, systolic	diastolic	presystolic
51P	first sound, character	52P	replaced by murmur
53P	second sound, character	54P	replaced by murmur
55P	murmur heard, systolic	diastolic	presystolic
51A	first sound, character	52A	replaced by murmur
53A	second sound, character	54A	replaced by murmur
55A	murmur heard, systolic	diastolic	presystolic

56 pericardial friction sound, area

Front Back and Sides of the Chest for the Lungs:

Inspection 57 form healthy flat deformed barrel chest 58 expansion restricted R L

Palpation 59 expansion restricted R L area, vocal fremitus 60 altered in intensity R L area, 61 absent R L area

Percussion 62 resonance impaired R L area 63 stony dullness R L area

Auscultation breath sound 64 equally intense weak R L area 65 absent R L area 66 character of breath sound vesicular, cavernous, tubular, amphoric area 67 adventitious sounds rales fine medium coarse area rhonchi sonorous sibilant R L area 68 vocal resonance altered in intensity area absent area oegophony area 69 pleural friction sound area

Abdomen:

Inspection 70 skin disease scar prominent veins 71 swelling 72 respiratory movements

Palpation 73 rigidity of recti R L 74 spleen 75 liver 76 gall bladder palpable tender 77 other local tenderness, area 78 palpable caecum sigmoid 79 other lumps glands omentum, area

Percussion 80 tympany local distension 81 abnormal dullness

To complete 82 knee jerks R L 83 blood pressure S D

Clinical Diagnosis

(Taking into account only items 1 and 2 below and also 3 if readily available)

Basis of Diagnosis:

1. Relevant History

Family history Past illness History of onset Sequence of symptoms and progress of the disease Present symptoms of all the systems

2. Routine Clinical Examination

(Observations are to be recorded NOW SYSTEM BY SYSTEM and NOT regionally or topographically)

General condition and appearance Circulatory system Respiratory system Alimentary system Hæmopoietic system and Spleen Integumentary system and Subjacent glands Nervous system and Special organs Eye Ear Nose also Others.

Other Possibilities (*i.e.*, Differential Diagnosis)

3. Ordinary Simple Pathological Examinations
Urine Stools Sputum Blood
4. Specialised Laboratory and Other Investigations

FINAL & COMPLETE DIAGNOSIS INCLUDING INCIDENTAL DISEASES

SYMPTOMS AND PHYSICAL SIGNS WHICH ARE UNEXPLAINED

PROGNOSIS

Immediate danger to life Prospect of complete recovery Expected duration of illness Any risk in future

TREATMENT

The First Essential:

Assure Inspire faith and confidence Instil hope in the sufferer Do not be oversecretive with the relations.

Prophylactic or Preventive:

For contacts, attendants and the community.

Curative:

General management of the case—home *versus* hospital, climate, room, ventilation, bed, dress, rest, nursing, sponging, water intake, diet, vitamins, movement of bowels.

Specific treatment Symptomatic treatment and treatment of complications Non-specific treatment and physiocotherapy After treatment.

FOLLOW UP OF THE CASE

(*Concluded from page 372*)

sulphonamides local and general combined, as sure destroyers of pneumococci, had solved the problem. He recalled the part of his speech where he had outlined his own technique of the use of sulphanilamides and said that he had found that method absolutely fool-proof against the offending micro-organisms including the notorious pneumococcus. Cultures of smears had thus been made obsolete. But if some surgeons still believed in the utility of making cultures of conjunctival smears they might please themselves.

Finally, answering Dr. Chhiber's objections to intracapsular extraction, the speaker said that it was his experience based on observation of patients operated more than 10 years ago that intracapsular extraction in itself did not result in gradual diminution and loss of vision. In cases where it did occur it was the result of complications occurring at the operation or improper healing of the wound due to iris having become incarcerated in it—this latter condition Dr. Chhiber himself had noticed in cases on which he had based his remarks.

(*Concluded from page 398*)

APPENDIX II—SECOND SCHEDULE (*Continued*)

OTHER COUNTRIES	REGISTRABLE QUALIFICATIONS *Title*	*Nature of qualifications as stated on diplomas*	*Abbreviations*
MALTA—			
Royal University of Malta	M.D.	Do.	U. Malta.
NEWFOUNDLAND—			
Newfoundland Medical Board (b)	L.M.S.	Do.	Nfld. M. Bd.
NEW ZEALAND—			
University of New Zealand	M.B., Ch.B Ch.M., M.D.	Do.	U. N. Zealand.
UNION OF SOUTH AFRICA—			
University of South Africa (b)	M.B., Ch.B.	Do.	U. S. Africa.
University of Cape Town (a) (d)	M.B., Ch.B. M.D., Ch.M.		U. Cape Town.
University of the Witwatersrand, Johannesburg (a) (d)	M.B., Ch.B. M.D., Ch.M.	Do. Do.	U. Witwatersrand.
STRAITS SETTLEMENTS AND FEDERATED MALAY STATES—			
The King Edward VII College of Medicine, Singapore (a) (d)	L.M.S.	Do.	Singapore Med. Coll.

(a) The qualification must be included in Table (I) of the British Medical Register as published from time to time by the General Council of Medical Education and Registration of the United Kingdom.

(b) When granted on or before the 31st October, 1937.

(c) The qualification must be included in Table (J) of the British Medical Register as published from time to time by the General Council of Medical Education and Registration of the United Kingdom.

(d) When granted on or before the 31st March, 1942.

(e) When granted on or before the 10th October, 1940.

(f) When granted on or before the 8th December, 1941.

CASE NOTES

SECONDARY ABDOMINAL PREGNANCY SIMULATING OVARIAN CYST

S. A. MOZUFFER, M.B.,
Civil Assistant Surgeon, Madhubani

S.A., Hindu female, aged 30 years, was admitted to the Madhubani Hospital on 28-10-45 for a tumour in the lower abdomen of one year's duration.

Obstetric History—Had one child about twelve years ago who died at the age of about eight years. No further pregnancy. Periods scanty and irregular.

Physical Examination—General health poor, marked anæmia. Lower abdomen was occupied by a dull, rounded, more or less centrally placed tumour extending to about two fingers above the unbilicus, smooth, tense and cystic except for a small irregular hard projection over the upper part, and to the right.

P. V. Examination—A tense and cystic mass completely filling the pelvis, continuous with the mass in the abdomen, uterus felt high up to the right (the hard projection felt per abdomen) cervix displaced and pointing to the left.

Diagnosis—A diagnosis of ovarian cyst was made but as the patient was weak and anæmic and was suffering from dysentery, operation was deferred for sometime and in the meantime she was put on anti-dysenteric treatment and general tonics. She was operated on 17-11-45 under ether anæsthesia.

Operation—On opening the abdomen, a thick tense cystic mass covered by peritoneum and adherent on all sides was seen. On exploration a few irregular hard knobs were felt deep to the left and at the back, which proved to be the limbs of a fœtus. The uterus along with the right tube and ovary was drawn up over to the right side and was adherent obscuring the feel of the head over which it lay. The left ovary and tube were indistinguishable from the mass. The sac was freed from its adhesions, and was removed entire except for a small tear at the side where the uterus was attached. There was very little escape of fluid in the peritoneal cavity. Abdomen was closed in the usual way. On cutting open the sac a full grown fœtus in a good deal of fluid, that had been dead for sometime with a spongy looking placenta was found. The patient became bad during the latter part of the operation and had to be given about two pints of saline into the vein along with other measures.

Progress—She rallied well and under general care made an uneventful recovery except for a slight rise of temperature between the third and sixth days which was controlled by a few daily injections of Soluseptasine.

Her stay in the hospital was somewhat prolonged on account of her having developed a small bedsore and she was discharged cured on 5-1-46.

Discussion—On close and leading questioning a few days after the operation she gave the history of having missed a period in October and having had acute pain in the abdomen about one and a half months after her last period, general enlargement of the abdomen with doubtful fœtal movements, of having pains simulating labour pains in the month of June (about eight months afterwards) after which the size of the abdomen remained stationary.

The points of interest in the case are:—(1) No fœtal parts could be felt on account of the fluid and pulling of the sac by adhesions behind and uterus obscuring the feel of the head. (2) No definite history, which is important in such cases could be elicited from the patient who was an illiterate villager.

Acknowledgment—My thanks are due to Lt.-Col. A. N. Palit, O.B.E., F.R.C.S., M.R.C.O.G., I.M.S. (RETD.) for kindly allowing me to publish the case and making some useful corrections.

MUMPS ENCEPHALITIS

AMALANANDA DAS, M.B., M.R.C.P. (LOND.),
AND
HIMANSU KUMAR ROY, M.D. (CAL.),
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INTRODUCTION

Among the sporadic or non-epidemic types of virus encephalitis, mumps encephalitis holds an important position and in certain regions of the world *e.g.*, North America this variety possibly ranks first. (Hammon, 1945). Small epidemic outbreaks of mumps are quite common, chiefly during the winter and early spring but the occurrence of encephalitis during such epidemics is a rare and sporadic event. Frequency of incidence of encephalitis in mumps tends to increase with the severity of the epidemics. Curiously, most of the cases reported in literature have been male patients.

The neurological manifestations in mumps usually make their first appearance at the height of parotitis. Very rarely the neurologic disturbances may precede the parotitis. In fact there may be cases of mumps meningitis or encephalitis without their being any parotitis and which are recognised as such only from epidemiologic and clinical studies (Ford, 1937).

Various types of neurological manifestations have been described. Of these encephalitis and meningitis are the most common. Rarely, ascending myelitis, meningo-radiculitis, motor polyneuritis, cranial nerve palsies, diaphragmatic paralysis, localised muscular atrophy, cervical sympathetic paralysis, labyrinthitis, optic neuritis, optic atrophy, papillœdema, retrobulbar neuritis and even hydrocephalus have been mentioned. (Ford, *loc. cit.*).

PATHOLOGICAL BASIS OF MENINGOENCEPHALITIS OF MUMPS

Only a few studies have been made in this connection. The meninges show evidence of congestion and lymphocytic infiltration. In some cases polymorphonuclear leucocytes predominate. As a result of the meningeal inflammation, there is an exudation of gelatinous or fibrinous and sometimes even purulent material in the subarachnoid space, leading to detectable changes in the cerebrospinal fluid. These are: increased pressure of the spinal fluid, occasional cloudy or opalescent appearance, a pleocytosis, usually of a lymphocytic variety but sometimes of a polymorphonuclear type and an increase in globulin content.

In cases which recover, spinal fluid changes gradually disappear and the normal characters are restored by the end of 6 weeks from the onset of the condition—much later than the period of clinical recovery.

Significant histopathological changes in the brain have been described. Chromatolysis of neurons, some increase of glial cells and a perivascular infiltration, and a perivascular demyelination of white matter with accumulation of fat granule cells—a picture so characteristically found in the brain of measles encephalitis—have been described. The changes are most intense in the brain stem, especially around the aqueduct of Sylvius, in the substantia nigra and the dorsal part of the medulla.

Below we present the protocols of an interesting case of meningoencephalitis.

Case Report

Abdul Ghani, M. M. 22. medical student. Admitted 4.2.46.

Onset—The patient had fever with chill and rigor on 2-2-46. Temperature rose to 102°F. Along with this the patient had vomiting, headache, a burning sensation all over the body and some epigastric pain.

On admission on 4-2-46 he complained of severe headache, fever and vomiting.

Examination on admission—Temp. 100°F., Pulse 88 per minute, of good volume and tension. Respiration 20 per minute. Patient fully conscious. Eyes markedly congested. Pupils equal, normal, reacting well to light. Throat congested. No rash on the skin. No enlargement of lymphatic glands. Neck not stiff. Kernig's absent. Heart and lungs—no abnormality detected. Abdomen—slight epigastric tenderness. Jerks normal.

Progress and course—The fever continued, with remissions up to 6-2-46. He had intense vomiting. He was slightly delirious and dazed on the morning of 6-2-46 and tried to get out of bed. He had two convulsions of a generalised nature on 6-2-46 during day time. After the convulsions he became unconscious.

Examination at this stage revealed the following:—

Patient was unconscious. Eyes blood shot. Pupils dilated, reacting sluggishly to light. Marked pill-rolling tremors of both hands. Slight parotid swelling both sides were noticeable. Neck was not stiff. Kernig's absent. Pulse good volume and tension, rate 86 p.m. Heart—soft and systolic murmur. Lungs—sign of diffuse bronchitis. Abdomen—distended. Bladder full. Spleen just palpable. Skin—no rash. Lymphatic glands not enlarged. Nervous system—abdominal reflexes absent. Plantars—right extensor, left doubtful extensor response.

The parotid swelling increased markedly during the same night and was quite formidable by 1 A.M. on 7-2-46. The parotid swelling was stationary in the morning and was slightly less in the evening. Patient showed slight improvement, and was able to protrude his tongue.

The next day he was more conscious. The parotid swelling diminished and progress towards recovery was uneventful from this time onwards. After recovery he had loss of memory for events immediately preceding his illness which gradually cleared up and the psychical functions became normal.

Clinical Pathology—Blood—4-2-46—no M.P., no leucocytosis. 5-2-46—no M.P., no leucocytosis. 6-2-46—Total W.B.C. 12,8000, poly 85, lympho 13, large mono. 2 per cent. M.P. not found. Lumbar puncture on 6-6-44—fluid clear, normal tension; cells—lymphocytes +. Blood culture showed no growth; Widal—negative. Weil Felix—negative. Urine examination—nothing particular.

Treatment—On 4-2-46 and 5-2-46 he had quinine by mouth and by injection along with general treatment.

From 6-2-46 he had sodium acetate and glucose I.V.; rectal saline. Sodium gardinal and Calcibronat by injection and Penicillin 20,000 units I.M. 4-hourly for 72 hours, along with the general treatment.

Comments—The late manifestation of parotitis after the development of features of meningoencephalitis is at once a striking feature of the above case. Philibert in 1932 (Smith, 1944) put up evidence to show that virus entering through conjunctivæ, is incubated in the central nervous system (this explains the early cerebrospinal fluid changes in mumps) and is then excreted into the salivary glands, pancreas, testes etc. at variable periods. The clinical course of the case presented here is quite in line with this course of the virus in the human body as conceived by Philibert. Incidentally, in Philibert's conception, we may find an explanation of the early intense congestion of the conjunctivæ, noted in this case. The convulsions, the delirious state and the pill-rolling tremors of the hands associated with fever remind us of epidemic encephalitis but the development of the parotid swelling on the 5th day establishes the true ætiologic nature of the disease. In contrast to the prolonged course of epidemic encephalitis, the mumps encephalitis has only a short duration with a tendency to rapid recovery as was witnessed in our case. We think it wiser to refrain from assessing how far penicillin therapy in our case materially contributed to the rapid recovery because the experience in a single case is naturally no proof of *post hoc* or *propter hoc*. Furthermore, this has to be borne in mind that mumps encephalitis has the usual tendency to recover spontaneously and that penicillin has been found ineffective in most of the virus diseases.

Summary

1. Epidemiology and pathology of mumps encephalitis have been briefly discussed. 2. A case of mumps encephalitis with a late development of parotitis and with a rapid favourable termination has been presented.

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References

Ford, F. R.—Diseases of the Nervous System in Infancy, Childhood and Adolescence. 1937. p. 517 (includes a bibliography).

Hammon, W. M.—*Clinics*, **4**:488, 1945.

Smith—*Clinical Journal*—July-August, p. 137, 1944.

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TRAINING OF MEDICAL TEACHERS

The expansion of medical relief in India is one of the burning topics of the day. It is being talked about as a part of the post-war reconstruction schemes. That tends to give one an impression that the problem has been created by or is in some way connected with the war. But that is not so. It existed in as acute a form before the war as it does now. Only more attention is being paid to it in these days.

Figures have been quoted in the press, medical and lay, to show how grossly inadequate the number of doctors is for the population of the country as compared to Western countries. These figures need not be reproduced here. It is admitted at all hands that if medical aid is to reach the masses, as it should, the present number of doctors qualifying every year must be multiplied manifold. That means that a large number of new medical colleges ought to be opened and the existing ones be extended as much as possible. There is little force in the argument adduced by some that it is not right to increase the number of medical teaching institutions and to turn out more doctors unless the country can support them.

The ideal should be to admit at least 100 students a year. An institution admitting less is uneconomical in many respects. It is gratifying to note that some new colleges are being opened and that some of the existing medical schools are being raised to the college standard. It is hoped that the process will continue until the objective is fully achieved. While attention is being paid to meeting the other requirements of these institutions one very important—rather vital problem, namely that of supply of trained medical teachers is being overlooked. It is not the buildings but men who work in them, that make an institution.

A teacher's profession demands a continuous process of education. A good teacher must possess not only high academic qualifications, but self-confidence, personality, a progressive mind, a continued state of preparedness, and above all experience of teaching and the knack of imparting knowledge. These virtues can be acquired by thoughtful practice under skilled guidance and not by pondering over books or passing examinations alone. So far there is no provision for formal teacher-training for medicine. It has been well said that medical education suffers from a plethora of 'authorities' on medicine and a dearth of 'teachers'. The art of teaching has become a science and a profession. The medical profession disapproves of unqualified practitioners, and of the practice of medicine without first serving an apprenticeship. Yet, strangely enough, medical teachers commonly have had no training in teaching before engaging in instruction of medical students. This has been serious enough in the past and threatens to be worse in the near future when the demand for medical teachers is about to exceed their supply.

What is the remedy? The problem is not easy of solution, but a lot can be done if the authorities in charge of the existing medical colleges in India would give a serious and immediate consideration to it. Young men of high academic qualifications, post-graduate training, intelligence, personality and necessary aptitude might be given full and free facilities for under-studying professors and heads of departments in the existing institutions. They should be taken on over and above the recognised teaching staff and given every possible opportunity and guidance to develop the art of teaching. The period of such training should not be less than 3 years—may be 2 years in the case of some subjects—and selection of teachers may be conveniently made from these medical men. If this suggestion is acted on earnestly and promptly, a fair number of tolerably well trained teachers will become available in the course of the next 3 years or so to man our new colleges.

The proposal of an All-India Medical Institute where medical teachers and research workers will be manufactured is an alluring one but it is not likely to materialise for a considerable period. Till then something ought to be done.

CURRENT MEDICAL LITERATURE

Polyneuritis from Sulphanilamide

Muller (*Acta. Med. Scand.*, **121**:95, 1945, Ref. *J.A.M.A.*, **130**:245, 1946) reports 7 cases of polyneuritis following chemotherapy in 2 women and 5 men. The patients, who were admitted to the neurologic clinic of the Serafim Hospital in Stockholm, were between the ages of 3 and 56 years. Two of them were treated with sulphanilyldimethylsulphanilamide (uleron), 1 with sulphanilamide, 2 with sulphathiazole, 1 with sulphanilamide, sulphapyridine and sulphathiazole and 1 with sulphapyridine. In the cases of polyneuritis caused by sulphanilamide, sulphapyridine and sulphathiazole the symptoms were more extensive and more pronounced than in the cases caused by sulphanilyldimethylsulphanilamide and sulphamethylthiazole. In addition there was less motor disturbance than in polyneuritis caused by sulphanilyldimethylsulphanilamide and sulphamethylthiazole. The incidence of polyneuritis is probably greater after treatment with sulphanilyldimethylsulphanilamide and sulphamethylthiazole than with the administration of other non-methylated sulphanilamide compounds. The possibility that in some cases polyneuritis may result from a purely toxic damage to the nerve tissues cannot excluded. In general, an allergic reaction seems to be responsible for its occurrence, as polyneuritis may result from serum administration. Previous damage to the nervous system, achylia and thiamine deficiency may be predisposing factors which render the patient susceptible to polyneuritis. Muscular exertion may cause a latent polyneuritis to become manifest. To prevent the occurence of polyneuritis, chemotherapy should be practised for as short a period as possible. Intermittent administration of the drug should be avoided. Methylated preparations should not be employed. Patients who on the occasion of previous treatment presented signs of hypersensitivity such as drug fever or exanthems should be desensitized before repeating chemotherapy. Polyneuritis due to sulphonamide administration suggests that further chemotherapy should not be employed.

Toxicity of Thiouracil

Van Winkle and others (*J.A.M.A.*, **130**:343, 1946), on the basis of a survey covering the experience of 328 investigators in 5,745 cases present the following recommendations which appear justified:

Thiouracil is effective in the management of thyrotoxicosis and possible thyroiditis.

Thiouracil is of no value and should not be used in other derangements of thyroid activity or in conditions not associated with hyperthyroidism.

More information should be secured concerning the induction of remissions by thiouracil and the factors affecting the permanence of these remissions.

At present the optimum dosage schedule appears to be 0·4 gm. per day, in divided doses initially, and after the symptoms are controlled or the basal metabolic rate is within the normal range the dose should be reduced to 0·1 or 0·2 gm. per day. More information is needed on the effectiveness of lower doses.

On the basis of the available information, it can be recommended only that thiouracil be used for preoperative treatment or for those patients for whom operation is contraindicated. The wisdom of depending on thiouracil as a substitute for operative procedure can be determined only by following the results of investigations carried on for longer periods.

Many patients, particularly those who have received previous iodine therapy, do not respond immediately to thiouracil therapy; hence medication should be continued for at least thirty days, or, for a patient to whom iodine has been administered, for sixty to one hundred days, before concluding that no response to thiouracil is possible.

Approximately 13 per cent of all cases can ce expected to show some adverse reaction to thiouracil therapy.

The most frequent and severe complications of thiouracil therapy are granulocytopœnia, leukopœnia, drug fever and dermatitis. The appearance of jaundice, purpura and anæmia has been reported and should be watched for and, if observed, calls for careful evaluation of the clinical condition of the patient before thiouracil therapy is resumed.

Granulocytopenia occurs in about 2·5 per cent of cases and is the most serious complication of thiouracil therapy. This reaction tends to occur in the early weeks of treatment, and 80 per cent of the cases are seen in the twelfth week of therapy. No relationship to the dose of thiouracil was apparent. Treatment of this complication should consist of massive doses of penicillin (500,000 units per day).

Leucopenia had an incidence of 4·4 per cent, seen early in treatment, 75 per cent occurring in the first eight weeks but not related to dosage. More information is needed on the relationship between leucopenia and granulocytopenia.

Drug fever had an incidence of 2·7 per cent, seen very early in treatment, 85 per cent occurring in first four weeks but not related to dosage. Reactions occurring early tended to be more severe than those occurring late in treatment.

Skin reactions had an incidence of 3·3 per cent. Urticaria was the most common, but a wide variety of other dermatoses were seen. None were deemed serious, but caution is advised in continuing therapy in the presence of these complications.

Three fourths of the investigators were of the opinion that the incidence of adverse reactions of thiouracil was less than the incidence of complications from present methods of treatment.

It should be emphasized that patients receiving thiouracil therapy should be carefully watched, especially during the first twelve weeks of therapy. Patients should be instructed to report immediately to their physician if any adverse symptoms such as sore throat, fever, coryza or malaise are experienced.

Since the mild and the juvenile types of hyperthyroidism can frequently be controlled by iodine therapy alone, thiouracil should not be used for these patients unless the safer form of therapy proves ineffective.

Toxic Manifestations Associated with Prolonged Ertron Ingestion

Freeman and others (*J.A.M.A.*, **130**:197, 1946) write that the use of large doses of vitamin D in the treatment of arthritis is a dangerous practice which may do the patient harm. The use of repeated large doses of vitamin D for any therapeutic purpose should be accompanied by appropriate tests, performed at regular intervals, to determine the state of calcium metabolism and kidney function. The maintenance of a relatively constant calcium and phosphorus intake simplifies this problem. The following tests are suggested as appropriate for this purpose: blood nonprotein nitrogen or urea, serum calcium and inorganic phosphorus; the twenty-four hour urinary excretion of calcium with the patient main-

tained on a low calcium diet for no less than two days prior to the collection of urine: qualitative test for the presence of albumin in the urine; concentration dilution test and phenolsulphonthalein excretion as measurs of tubular function. It follows that such tests should be applied to patients prior to the administration of large doses of vitamin D and that evidence of impaired kidney function should be considered as a contraindication to this treatment. It is not meant to imply that these tests, though the results should be consistently within the normal range, give one assurance that metastatic calcification is not promoted by this treatment. However, gross impairment of the kidneys can certainly be averted if the tests mentioned are applied routinely in conjunction with the Ertron threapy. It is suggested that the history taken on every patient suspected of having renal disease should include questions intended to determine whether or not the patient has ever taken large doses of vitamin D.

Renal insufficiency occurred in 2 patients receiving doses of Ertron such as are used currently in the treatment of arthritis.

A decreased calcium retention and an increased urinary excretion of calcium occurred in a child with rheumatoid arthritis who was given 100,000 units of Ertron daily.

Large doses of vitamin D from any source are potentially toxic, and this toxicity can be explained as due to its effect on calcium and phosphorus metabolism and kidney function.

Brain Abscess Associated with Congenital Heart Disease

Smolik and others (*J.A.M.A.*, **130**:145, 1946) write that symptoms of central nervous system involvement in a patient with a congenital heart lesion suggested the diagnosis of brain abscess. The clinical impression was verified by ventriculography, and surgical treatment was instituted successfully. The organism cultured from aspirated pus was identified as a member of the Hæmophilus influenzae group. Sulphonamide and penicillin thrapy were regarded as important adjuncts to surgical intervention. The patient has made a complete recovery and is entirely symptom free one year after operation. She shows no personality change and no alteration of mental level.

Acroparaesthesia of Hands and Arms in Women

Walshe (*Brit. M.J.*, **2**:596, 1945) observed a number of women, mostly middle aged or elderly, normally unaccustomed to great manual effort, who under wartime demands, were obliged to take on much heavy work. They developed numbness, tingling and "uselessness" of the hands and fingers, often associated with pain. The response to the treatments commonly adopted was uniformly disappointing, for the patient was expected to follow her normal routine of life. A few of the sufferers discovered that a rest or holiday afforded remarkable relief, suggesting a mechanical origin of the syndrome. There is almost always tenderness of the extensor muscles in the forearm and sometimes of thenar and adductor muscles of the thumb without muscular wasting. Objective sensory loss is exceptional although when pain and paræsthesias are maximal there may be some blunting of cutaneous sensibility over the digits. Cyanosis or pallor of the fingers is occasional, but Raynaud's syndrome is not an essential part of the picture. The author is convinced that the condition is a manifestation of a rib pressure syndrome. The rib in question is the normal first rib, and traction and compression are exerted on the lower components of the brachial plexus and sometimes also the subclavian artery, when from muscular atonia the muscles supporting the shoulder girdles allow these to droop and remain at an abnormally low level. Acroparæsthesia is a mechanically produced syndrome. It is not to be regarded as dependent on abnormalities of matabolism—either toxæmic or due to dietary deficiency—or as related to pregnancy. The essential treatment is rest for the limbs.

Physostigmine for Muscle Spasm in Rheumatoid Arthritis

Cohen and others (*J.A.M.A.*, **130**:265, 1946) writes that physostigmine salicylate has been used successfully in the relief of muscle spasm and associated conditions such as fibrositis and bursitis. It is an inexpensive form of therapy, replacing the more expensive neostigmine methylsulphate. Physostigmine appears to give local pain reactions less frequently than neostigmine.

Physostigmine, like neostigmine, causes relaxation of muscle spasm even though it has persisted for many years. As a result, active as well as passive motion in the affected joints is more easily carried out with less pain.

The effect of physostigmine given subcutaneously is rapid (within three to fifteen minutes after administration) and may persist for several days.

Further studies with neostiguine bromide orally do not warrant its continued use in the treatment of muscle spasm in rheumatoid arthritis and its allied conditions.

Physostigmine did not produce any severe toxic reactions.

The studies reported indicate that physostigmine is no more toxic than was neostigmine methylsulphate when used in comparable doses.

The usual procedure is to give 0·6 mgm. of each physostigmine and atropine sulphate simultaneously. If no relaxation of muscle is obtained with this dose, physostigmine is increased to 1·2 mgm. (1/50 grain). If the patient complains of dizziness, salivation, pain in the abdomen and nausea, the dose of physostigmine should be reduced or the dose of atropine increased.

Physostigmine is used in the treatment of muscle spasm in rheumatoid arthritis and allied conditions for the purpose of relieving pain due to spasm and for preventing deformities.

Dicumarol in Acute Coronary Thrombosis

Peters and others (*J.A.M.A.*, **130**: 398 1946) write that one hundred and ten cases of coronary thrombosis with myocardial infarction have been studied. Sixty patients received the accepted treatment for coronary thrombosis. Fifty received the usual treatment plus dicumarol sufficient to maintain their plasma prothrombin activity at 35 to 50 per cent of normal. The incidence of clinical embolism was 16 per cent in the nondicumarolized group and 2 per cent in the dicumarolized group. The mortality rate in the nondicumarolized group was 20 per cent and in the dicumarolized group was 4 per cent.

The authors have not been impressed by a quicker return of the electro-cardiographic tracing toward normal in the dicumarolized patients compared to those not receiving the drug and gives in the following lines their conclusions.

1. We have observed an increased clotting tendency in most of our cases of acute coronary thrombosis. This is manifested by a decrease in the prothrombin clotting time of diluted (12·5 per cent) plasma.

2. Dicumarol can be safely administered to patients with coronary thrombosis to disrupt this increased clotting tendency.

3. The incidence of embolism as a complication of coronary thrombosis has been significantly reduced in this series of cases by maintaining the prothrombin activity between 35 and 50 per cent of normal during the period of active treatment and early convalescence—a period of six weeks.

4. Digitalization for congestive failure in coronary thrombosis increases the incidence of thrombo-embolic complications. This hazard may be nullified by the dicumarolization of such patients.

5. Few toxic reactions have been noted in this series. The drug can be administered, if desired, for an indefinite period without ill effects.

6. A comparison of 50 dicumarolized patients with 60 nondicumarolized patients reveals a reduction of embolic phenomena to one eighth and mortality rate to one fifth in the former. Such reduction appears sufficiently significant to warrant further clinical evaluation of this anticoagulant.

Treatment of Cirrhosis of the Liver with Choline and Cystine

Beams (*J.A.M.A.*, **130**:190, 1946) writes that it is important to emphasize the the limitations of the treatment of cirrhosis. Up to the present time there has been no treatment which has been found that alters fibrosis of the liver. Recovery of liver function, therefore, must depend on the arrest or reversibility of the other pathologic changes which are found in cirrhosis.

Twenty patients with cirrhosis of the liver who had ascites were treated with a high protein, low fat diet supplemented by yeast and a combination of choline and cystine.

Twelve of the 20 patients with livers which were not enlarged showed no response to the therapy, whereas 7 of the 8 patients with large livers made a good revovery from liver decompensation.

A comparison of the treated group of patients with large livers with a similar group of 15 patients who were treated with only a high protein, low fat diet supplemented with yeast indicated that the combination of choline and cystine had a favourable influence in the treatment of cirrhosis.

The striking difference in the response of patients with large livers compared to patients with livers not enlarged suggests that the combination of choline and cystine is effective where fatty changes in the livers are suspected.

Diet and Rest in Infectious Hepatitis

Hughes (*Bull. U. S. Army Med. Dept.*, **5**:662, 1945) treated cases with bed rest and a diet consisting of protein 180 to 200 gm., carbohydrate 500 to 600 gm. and fat 50 gm. per day. Nineteen patients were used as cotrols and were allowed full activity and free choice of food at the ambulatory patients' mess. On the basis of this study Hughes concluded that it is unwise to treat acute infectious hepatitis with jaundice by permitting the patients to be ambulatory during the active phase of the disease and to eat whatever foods they choose. A regimen of bed rest and a high protein, high carbohydrate and low fat diet, as contrasted to a regimen of full activity and regular diet, results in a much greater percentage of patients returned to full duty and a substantial decrease in the period of hospitalization. These conclusions are supported by purely objective data such as the speed of the return of liver size to normal, body weight curves and the speed of return to normal of the icterus index and the blood phosphatase and cephalin cholesterol tests. Further studies will have to determine which of the two factors, bed rest or diet, is the more important in the treatment of infectious hepatitis.

Disappearance of Peptic Ulcer After Feeding of Normal Gastric Juice

Morrison (*Am. J. Digest. Dis.*, **12**:323, 1945) removed gastric juice from normal subjects and fed it to patients with peptic ulcer. Normal gastic juice was obtained from 6 volunteer subjects. The juice was rendered neutral by sodium hydroxide, filtered and rendered bacteriologically sterile by 0·3 per cent tricresol as a preservative. Ten patients with uncomplicated peptic ulcer rœntgenologically demonstrable as a niche, a crater or an ulcer defect, in addition to the associated x-ray finding such as spasm, increased emptying time and local pain to palpation under fluoroscopic guidance, were placed on a well balanced diet. One half ounce of normal gastric juice diluted with 2 ounces of tap water was fed to each patient every hour during waking hours. No other medication was given. Eight of the 10 patients responded in from twenty four to forty-eight hours to the feeding of normal gastric juice by becoming free from ulcer symptoms. No ulcer recurrences have occurred in these 8 patients during a three-year follow-up period. Of the 2 patients who showed no improvement, I had ulcer symptoms for nineteen years and the other intermittently for twenty-five years. The author concludes that a "protective principle is elaborated within the gastric and doudenal mucous membranes and is secreted into the gastric juice. This protective principle may be lacking or impaired in patients with peptic ulcer, but it can be fed to them, causing the ulcer and symptoms to disappear.

Structure of Liver in Pellagra

Gillman and Gillman (*Arch. Path.*, **40**:239, 1945, Ref. *J.A.M.A.*, **130**:450, 1946) discuss the value of hepatic puncture in estimating the structural modifications in the human liver in pellagra. By an improved liver biopsy technic they removed fragments of liver from 120 patients with pellagra on admission to the hospital. On the basis of the amount, the character and the distribution of fat and pigment and the presence or the absence of cirrhosis, these livers were graded into four main types. In type 1 the characteristic feature is the presence of varying amounts of fat only. This type may be subdivided into six subtypes according to the quantity, the nature and the distribution of the fat. Type 2 contains cytosiderin and cytolipochrome in the hepatic and Kupffer cells only, distributed in the form of discrete granules. Type 3 is very similar to type 2 except that the iron-containing pigment not only is present in the liver cells and the Kupffer cells but is aggregated in large masses in cells lying either in the hepatic lobule or in the portal tracts. Pigmentary cirrhosis of varying intensity is the main feature of type 4. Livers of types 2, 3, and 4 could exhibit the same degrees of fatty change as described in livers of type 1. The type 1 liver is predominantly a feature of pellagrous infants and children, while the pigmented liver, with or without fat, is found in adolescents and adults. Iron pigment arises within the liver cells as the results of a profound disturbance of intracellular metabolism induced by dietary imbalance. The author stress that the therapy and the assessment of its effectiveness should be based not only on the clinical picture but on the structural alterations in the liver. In pellagrins the fatty change, the formation of intracellular pigment with or without cirrhosis, and carcinoma represent different

pattern of reactivity of the liver cells to acute and chronic malnutrition.

Treatment of Compound Fractures of the Femur

Soto-Hall and Horwitz (*J.A.M.A.*, **130**:128, 1946) write that early and adequate debridement is the most vital factor in the successful treatment of a compound wound.

Modern chemotherapy has not altered this opinion, although the use of bacteriostatic drugs has brought brilliant ressults in controlling the invasive infection and in reducing the number and severity of complications.

The principle of converting an open fracture into a closed one by delayed wound suture is strongly endorsed because it insures, with minimal hazard, rapid healing and little scar formation.

Conservatism in removal of large bone fragments is advocated, since it lessens major problems of reconstructive surgery.

An analysis of 163 fractures of the femur treated in various theatres of war indicates that extremely gratifying results are being obtained with the conservative treatment of traction in balanced suspension. There has been a low incidence of sepsis and a high percentage of bone union without deformity.

The use of early internal fixation in the presence of an open wound is accompanied by greater danger of complication. When indicated in a few selected cases, internal fixation is safer if performed soon after the healing has been completed following secondary closure. The operation should be performed through a separate longitudinal incision with temporary counter drainage. When the type of fracture permits, multiple screw fixation is superior to the use of plates because of lessened surgical trauma.

The early use of active exercise, with carefully supervised resistive exercise during convalescence, offers a hopeful opportunity for the improvement of knee function.

Inhibition of Dental Caries by Ingestion of Fluoride Vitamin Tablets

Stream and Beaudet (*New York State J. Med.*, **45**:2183, 1945) report clinical trials with calcium fluoride-vitamin D in children between the ages of 8 and 13. One hundred and seventy-one children were studied in the first series. These were divided into 3 groups of 57 each. The first group received a yellow tablet containing 3 mg. of calcium fluoride, 30 mg. of ascorbic acid and 400 units of vitamin D as calciferol one tablet a day; and the second group received one white tablet containing only 3 mg. of calcium fluoride. The third group served as the control and did not receive any tablets. The experiment lasted for six months, and the study was limited to permanent teeth. Sixty children were studied in the second series. Thirty children were given one yellow tablet a day, and the other group of 30 served as controls and did not receive any tablets. This study was continued for eight months. The children in both series lived in an orphanage under similar conditions of diet, and each child had at least three cavities as judged by x-ray. In addition to these two series, tablets were given to a number of dentists who were to distribute them to patients between the ages of 8 and 16. Children between the ages of 8 and 16 not receiving fluorine in their water or food may expect on the average an increase of 40 to 65 per cent in the incidence of dental caries. When calcium fluoride was given to the children in the first series the increase in caries was reduced to 27 per cent, and when vitamins C and D were combined with the tablet the incidence was reduced further to 24 per cent. In the second series, even though this experiment ran two months longer than the first one, the increase dropped to 10 per cent as compared to 24 per cent in the first experiment. It is suggested that this decrease may be explained by the synergistic action of vitamins C and D with fluorine. Fluorapatite may be adsorbed from the surface of tooth enamel and is resistant to bacterial decomposition and lactic acid digestion. Fluorine combined with vitamins C and D in the form of a tablet offers a means of controlling the amount of fluorine to be ingested.

Radium

Desjardins and Williams (*J.A.M.A.*, **130**:207, 1946) write that radium treatment is often effective in myelogenous and lymphatic leukæmia. In the former, topical application of radium over the region corresponding to the enlarged spleen usually causes the organ to diminish in size rapidly, and the leucocytes undergo a corresponding reduction in number. In some cases, irradiation of the spleen alone is not sufficient and the long bones also must be treated. Irradiation of the long bones or of the lymph nodes in lymphatic leukæmia is best carried out with rœntgen rays rather than radium. In many cases a substantial improvement in the general condition accompanies the reduction in size of the spleen and superficial nodes and the fall in the leucocyte count. Acute leukæmia does not respond well to irradiation, but in the more chronic forms irradiation usually leads to prolonged remission of symptoms, although treatment may have to be repeated at varying intervals from time to time. When the spleen has been irradiated many times, it tends to become fibrous and radium gradually loses its effect. In cases of severe anæmia, exposure to radium should be repeated with caution; otherwise there may be danger of increasing the anæmia. Radium is applied for varying lengths of time over the spleen and superficial lymphatic enlargements only or in conjunction with irradiation of the long bones. Uusually a total exposure of successive areas for twenty-four hours at one time is sufficient. This may be repeated at intervals of one week or longer, depending on the exact dose given. During the past few years, phosphorus, when made artificially radio-active by a cyclotron and when given intravenously, has been found to yield results which are superior to those obtained by radium applied to the surface of the body.

In menorrhagia and metrorrhagia, which are often concomitants of fibroid disease of the uterus, raidum therapy is frequently of real value. It is accomplished best by intrauterine application, although sometimes the radium may be placed in the posterior vaginal fornix and supplemented with distance screening over the fundus. In young women the dose should be controlled so that a premature menopause does not occur. A universal tube applicator containing 25 to 50 mg. of radium in the form of radium sulphate, filtered through 0·5 mm. of silver and 2 mm. of gum rubber, and placed in the uterine cavity for fourteen hours, will bring on amenorrhœa in most cases. If necessary the treatment may be repeated after an interval of six months. In young women, in whom permanent amenorrhœa is to be avoided, a fourth to a half of this dose is often sufficient.

Lymphadenoma, lymphosarcoma and mediastinal and abdominal growths of a sarcomatous nature are often reduced in size by the application of radium, with concomitant improvement in the general condition.

The sensitiveness of malignant tumors of bone varies according to the susceptibiilty of the essential cells of the tumor. Thus diffuse endothelioma, otherwise known as endothelial myeloma, is quite sensitive, and the rate of regression of this tumor corresponds to that of the chronic form of lymphosarcoma and Hodgkin's disease. Chondrosarcoma is rather resistant, its rate of regression depending on the proportion of young cartilage cells in the tumor. True osteogenic sarcoma is comparatively resistant to irradiation. Some of these tumors may undergo a measure of regression after exposure to radium, but the regression is seldom pronounced and practically never complete.

Carcinoma involving certain organs responds well to the application of radium. In carcinoma (not adenocarcinoma) of the uterine cervix, the results obtained by expert workers are at least equal to those which follow surgical intervention. Carcinoma of the thyroid gland also is comparatively sensitive. On the contrary, adenocarcinoma, wherever situated, tends to resist irradiation. Carcinoma of the gastrointestinal tract is seldom greatly influenced by radium treatment.

Radium treatment is of considerable value in bringing on shrinking and fibrosis in tuberculous adenitis.

Improvement has been noted in certain skin diseases when treated with radium rays: for example, lichenified eczema, epithelioma and keratosis, psoriasis, xanthoma, localized mycosis fungoids and fibroma.

Lupus vulgaris, when all other treatment has failed, is sometimes favorably influenced by radium.

In cavernous nævus the course of the disease is favourably influenced. The treatment is lengthy and tedious. Overexposure should be avoided, especially about the face, for it brings about scarring. Much care and experience are needed in order to obtain good results.

The removal of warts and papillomas and the treatment of pyogenic granulomas by radium are generally successful. If the exposure is timed properly, involution occurs in from three to four weeks.

Good results have also been reported in the treatment of conditions which often follow injuries, such as keloids, painful scars and fibrous adhesions.

Moles, especially of the pigmented variety, should not be irradiated. They can be destroyed by means of high frequency current or they can be excised surgically.

Penicillin in Ophthalmology

In diseases of the eye infective processes are largely confined to the outer eye, and the various forms of purulent ophthalmia are classical examples; infections of the inner eye, such as panophthalmitis, are on the whole rare. Most inflammations of the eye, of which iritis and choroiditis are characteristic, do not produce pus, and the inflammatory exudate does not contain organisms. These distinctions in ocular pathology have been well established for many years, but gained added significance when the sulphonamides were introduced. It was found that the purulent infections of the outer eye responded readily to general sulphonamide therapy, but, while gratifying results were occasionally obtained in cases of iritis and iridocyclitis, the intraocular inflammations generally responded but poorly. Since the sulphonamides easily penetrated the interior of the eye, since adequate concentrations of the drug could be obtained, and since the response in frank infections was better than in serious uveitis, it became clear that the whole problem of intraocular inflammation required reassessment in the light of the new and positive knowledege. The sulphonamides have marked limitations. Though some experimental evidence has been advanced that they are effective in infections of the outer eye when used locally, it cannot be said that there is any real clinical support for these observations. It is questionable whether an adequate experimental lesion of the outer eye has yet been evolved, and there is little justification for the widespread and misguided use of the sulphonamides locally in such infections, while their local use for infections of the interior of the eye has never seemed justifiable in view of their ready penetration through the blood-aqueous barrier. Sulphonamide therapy in eye disease is thus largely oral administration of the drug.

Experience with penicillin in many respects runs counter to that obtained with the sulphonamides. The same fundamental distinction between infection and inflammation has still to be drawn, but in contrast to the sulphonamides penicillin does not readily penetrate into the interior of the eye when administered intramscularly. This has been shown experimentally, and has been confirmed in man. There is no evidence that in the inflamed eye the barrier is less absolute, but it appears that the intramuscular administration of penicillin in very many times the dosage currently used might allow some penetration of the drug into the eye. (Struble and Bellows—*J.A.M.A.*, **125**:685, 1944). Attempts to obtain more satisfactory penetration by procedures which either delay excretion of penicillin or modify the blood-aqueous barrier still require fuller study. For the present it must be accepted that the use of penicillin intramuscularly, in contrast to general sulphonamide therapy, has but little scope in infections of the inner eye. A further contrast is in the local action of penicillin. Since penicillin is not inactivated by pus or peptone, as the sulphonamides are, it has proved invaluable as a local medication. This has been brought out in many reports on the use of penicillin locally in acute conjunctivitis, in blepharitis, and in various septic inflammations of the outer eye. The most extensive work on these lines has been recorded in two papers on ophthalmia neonatorum (Rycroft—*Brit. J. Ophthal.*, **29**:428, 1945 and Sorsby and Hoffa—*Brit. M. J.*, **1**:114, 1945). However, it cannot be said that the many problems of the local use of penicillin have been solved. Local medication with penicillin requires knowledge of the limits of tolerance and of means for maintaining adequate concentrations. Clinically the limits of local tolerance with the available samples of penicillin have been found to be at about 2,500 units per c.cm. when used in the form of drops. Ointments have not so far been employed widely, as no adquate base has been available. Most of the penicillin ointments were quickly inactivated and became irritants rather than therapeutic agents (Parry and others—*Brit. J. Ophthal.*, **29**:479, 1945). It is possible that this difficulty has now been overcome and more use may be made in the future of penicillin ointments and creams, though limits of tolerance to, and absorption from, such ointments have still to be established. Since penicillin fails to pass the blood-aqueous barriers, it is tempting to inject it directly into the aqueous and vitreous, but it seems that only relatively small quantities can be so injected without damage. The limit of tolerance of the anterior chamber is probably about 200 units, and perhaps rather less for the vitreous (Sorsby—*Brit. J. Ophthal.*, **29**:511, 1945). Experimentally it has been found that massive quantities of penicillin injected into the vitreous produce extensive damage. A less drastic procedure is subconjunctival injection, and though relatively large quantities

have been used by some observers (RYCROFT—*Brit. J. Ophthal.*, **29**:501, 1945) it appears that the limit of tolerance is again relatively low—injections of about 600 units repeated daily. With any of these methods concentration and the maintenance of concentration are poor Drops are soon washed out from the conjunctival sac, and excretion from the anterior chamber of any injected penicillin is rapid. Penicillin introduced into the vitreous persists for considerably longer, possibly for more than 48 hours, but injected subconjunctivally it possibly for more than 48 hours, but injected subconjunctivally it is probably excreted in a matter of hours. The difficulties in obtaining and maintaining adequate concentrations by means of local applications are, therefore, considerable. These difficulties are illustrated by the studies recorded on ophthalmia neonatorum. Here penicillin in a concentration of 500 units per c.cm. instilled in the form of drops gave less satisfactory results than penicillin in double that concentration, while 1,500 units per c.cm. gave better results still, and with a concentration of 2,500 units per c.cm. recovery became the rule. Instillations at intervals of half an hour gave better results than hourly instillations, while remarkable rapid clearing of the infection took place when penicillin was instilled at intervals of five minutes. Even better results may be expected when penicillin is administered almost continuously—that is, at intervals of one minute for half an hour. (SORSBY—*Brit. M. J.*, **2**:542, 1945).

It is generally accepted that penicillin, like the sulphonamides, is ineffective against virus diseases. There is, however, ample evidence that the sulphonamides are effective against some of the larger viruses, such as those of lymphogranuloma inguinale and rat pneumonitis. They have also proved invaluable in trachoma and in inclusion blennorrhœa. Successes with local penicillin in inclusion blennorrhœa suggest that it may also prove of value in trachoma—and presumably in other infections due to the larger viruses; and indeed, promising results are already on record. (GILFORD—*Brit. M. J.*, **1**:232, 1945 and BARIUS—*Am. J. Ophthal.*, **28**:2007, 1945). In contrast to the uncertainly as to the action of penicillin on viruses is its established efficacy against the spirochaete. The possibilities thus opened in the treatment of ocular syphilis have as yet scarcely been explored. For the present the scope of penicillin in ophthalmology seems confined to its local use in external infections of the eye. Little is to be hoped for from general administration, while the introduction of penicillin directly into the eye still presents many difficulties that require intensive study. But if methods for the direct introduction of penicillin into the eye are evolved, then in many conditions treatment by the oral administration of sulphonamides may well be replaced by the local application of penicillin.—*Brit. M. J.*, **1**:18, 1946.

PLACENTA PRAEVIA

Three contributions on placenta praevia, giving the tabulated experience of this condition at three maternity hospitals over a number of recent years, were submitted at a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on 16-11-45, Prof. F. J. Browne presiding.

Reduction of Fœtal Mortality—Mr. C. H. G. Macafee (Royal Maternity Hospital, Belfast) based his remarks on 191 cases (including 24 private cases) from 1937 until Sept. 30 last. There were one maternal death (0·52%) and 42 stillbirths and neonatal deaths (22%). When the foetal mortality was corrected by the elimination of abnormalities, such as anencephalia from the stillbirths and of gastroenteritis from the neonatal deaths, it was only 18·8%. In an earlier series of 76 cases from 1932 to 1936 the maternal mortality was 2·6% and the foetal mortality 51·3%.

The two main objectives in dealing with placenta praevia were to reduce the foetal mortality without unfavourably affecting the maternal condition and to keep an open mind concerning treatment. One of the causes of foetal mortality in placenta praevia was prematurity. In the later years of the period under review the attitude adopted had been that placenta praevia was not an obstetric emergency which must necessarily receive active treatment on the first hæmorrhage, and this attitude had much enhanced the infant's chances of survival by lessening the complication of prematurity. In this new series of cases approximately 40% of the stillbirths and neonatal deaths occurred in the first two years of the period. In 1944 there were only three such deaths, representing 16·6% of the cases, and in the first nine months of this year only one death (6·4%). The type or degree of placenta praevia had an important influence on treamtent. Incidentally he pleaded for the removal from obstetric literature of the terms "Lateral," "marginal," and "central," which were not consistently used by writers. The insertion of the cord in relation to the separated area of the placenta was important and accounted for a certain unavoidable foetal mortality. If the cord were inserted at the lower edge of the placenta where the separation occurred the child was unlikely to survive and often died from the initial hæmorrhage.

Vaginal examination must be carefully considered. The examination had been postponed until the termination of expectant treatment: The cervix and vagina should, of course, be inspected by the speculum after the first hæmorrhage. He submitted that vaginal examination was an essential part of treatment for the following reasons: (1) it was not possible to diagnose placenta praevia on the character of the hæmorrhage; other causes of bleeding had been met with which would have been impossible to distinguish apart from vaginal examination; (2) the diagnosis of placenta praevia should not be made unless the placenta had been felt in the lower uterine segment; and (3) it was only after making a vaginal examination that the type of placenta praevia and the best method of treatment could be decided. Mr. Macafee showed the following table:

Methods of Treatment	*No. of cases*	*Stillbirths or Died*	*Per cent*
Artificial rupture of membranes ..	54	7	13·0
Artificial rupture of membranes and Willett's forceps	21	9	42·8
Version	23	18	78·3
Caesarean section	79	2	2·5
Breech	6	5	83·3
None	8	1	12·5

One maternal death followed a Caesarean section, and was due to a staphylococcal septicaemia—a maternal mortality rate for Caesarean section of 1·27%.

In the light of the excellent results recently published Mr. Macafee thought that as obstetricians they must revise their attitude towards the maternal and foetal mortality associated with placenta praevia. This mortality had been regarded as inevitable in the past; he believed it could be radically reduced, and that within ten years from now workers might be presenting results to the Section which would eclipse anything presented that night.

Factors making for improved results—Mr. Leonard Phillips (Queen Charlotte's) said that during that time 143 consecutive cases were treated. The maternal mortality rate in placenta praevia had been considerably reduced over the last ten or fifteen years. Formerly 10 or 15% mortality was quite common; 5% was now more usual, and there were series of cases which showed much lower mortality rates than that.

The first important factor responsible for improvement was that cases were sent into hospital in a better condition, usually after the first warning hæmorrhage; a second factor was the increased use and better technique of blood transfusion.

Another factor in improvement was the extended use of Caesarean section. Another reason for the extended use of Caesarean section nowadays was the different attitude towards child. They still believed that the child should not be considered at the expense of the mother, but it was very difficult to say sometimes whether Caesarean section was at her expense or not. In these days of single children and spaced families, where very often a placenta praevia baby was one which came after ten years of married life, or where the mother herself demanded that Caesarean section should be done, the position was difficult, and they were all aware of the psychological damage that might be done to the mother as the result of a lost baby. Moreover, they were now very much better at dealing with premature babies.

Mr. Phillips then showed an analysis of his 143 cases. There had been two maternal deaths, both in the marginal type of case; there were no deaths in the lateral type or in the complete placenta praevia type. The stillbirth rate was about 50%.

Method of Treatment	*Number of cases*	*Maternal deaths*	*Still-births*
Artificial rupture of membranes and binder	54	0	21
Bringing leg down	15	0	14
Caesarean section	9	0	0
Caesarean section with plugging ..	6	0	1
Plugging with rupture of membranes and binder	59	2	39

Looking back on these cases he saw that he had made a number of mistakes. He no longer treated these cases as emergencies, he left them alone and waited until they bled, and if they bled heavily he then dealt with them along these lines. In another series of cases he thought he would do less plugging and more Caesarean sections.

Antepartum Hæmorrhage in General—Miss Josephine Barnes (University College Hospital) dealt with the subject in relation to the general problem of antepartum hæmorrhage. She said that there was a great deal of confusion over the classification of cases of antepartum hæmorrhage and also the diagnosis and classification of placenta previa. From 1927 to the end of 1944 there were 538 cases of antepartum hæmorrhage admitted to the obstetric hospital at University College. Of this number 21 were delivered outside the hospital. The remaining 517 were classifiable as follows:

Placenta praevia	140
Accidental antepartum hæmorrhage	73
Antepartum hæmorrhage of uncertain origin ..	285
Antepartum hæmorrhage from extraplacental lesion ..	19

A case was not accepted as being one of placenta praevia unless the placenta was either felt from below or was found in the lower uterine segment after section. Among these 517 cases the maternal death numbered 14 (2·7%) and the stillbirth or neonatal mortality of (520 infants was 197 (36·9%). Among the cases of placenta praevia alone the maternal mortality was 2·9% and the stillbirth or neonatal mortality rate 52·1%.

She went on to discuss the various methods of treatment.. In cases of placenta praevia the methods of treatment adopted and the proportion of fatal results were analysed in the following table:—

Methods of Treatment	*No. of cases*	*Maternal death*	*Foetal deaths*
Caesarean section ..	38	1(2·6%)	7(18·4%)
Bringing down a leg	39	0	38(97·4%)
Willett's forceps ..	36	2(5·6%)	17(47·2%)
Artificial rupture of membranes ..	11	0	4(36·4%)

The maternal mortality occurred in what was known, according to the University College Hospital classification, as the second of the four degrees of placenta praevia. Like Mr. Macafee, she contended that classifications like "marginal," "lateral," and so forth should be set aside.—*Brit. M. J.*, **2**:779, 1945.

Hormone Treatment of Cancer

Dodds (*Lancet*, **2**:817, 1945) at a meeting of the Medical Society of London reviewed the experimental work which prepared the way for the treatment of carcinoma of the prostate with œstrogens. Late in the last century, castration was used as a method of treating benign hypertrophy of the prostate, but the scientific investigation of prostate function has been a recent development. Huggins devised a method in dogs of separating the bladder from the prostate and leading the urine via a metal cannula to the exterior, making it easy to collect prostate secretion. Secretion may be collected under resting conditions or after stimulation by pilocarpine. At the same time the Guttmans evolved a method for testing tissues and body fluids from phosphatase activity. The prostate and its secretion were found to be rich sources of the phosphatase acting maximally at pH 5 (acid phosphatase). The concentration of this enzyme in the prostatic secretion, in the blood, or in the urine may be used as a measure of prostate function. It was found that androgen injections produced rises in blood acid phosphatase similar to those found in metastasing cases of cancer of the prostate. This led Huggins to adopt orchidectomy in these cases, with very good results. Meanwhile the biological endocrinologists had shown that high doses of œstrogens would inhibit the secretions of the anterior pituitary. Inhibition of gonadotrophin secretion may be so great that all the symptoms of castration are produced. This led Huggins to adopt large doses of œstrogen as a form of therapy in place of castration, with equally good results.

Enumerating the principal natural and synthetic œstrogens, Professor Dodds said he thought that the nausea they sometimes produce is an effect of overdose which may be likened to the nausea seen so often in pregnancy. The synthetic œstrogens are preferable to the natural œstrogens because they are much cheaper and are active when given by mouth. Passing to the reasons for the benefits of œstrogen therapy in cancer of the prostate, he said he was not altogether convinced that there may not be some direct action on the cancerous process: a small proportion of breast cancers are undoubtedly benefited by œstrogen,

Mr. Terence Millin reviewed his experience with 200 cases of prostatic cancer. About 90% benefited from œstrogens. Most of those that failed to respond had apically situated tumours, which are difficult or impossible to operate on, readily give rise to metastases, and are rapidly fatal. Mr. Millin's experience does not extend beyond three years; and no case can be regarded as cured until at least ten years have elapsed. He finds stilbœstrol more efficacious than orchidectomy, while castration almost never helps where œstrogen therapy has failed. Even where symptoms are relieved by œstrogens, bony metastases may recur despite continued treatment. The value of determining serum acid phosphatase is limited since raised values are found only with bony metastases; urinary phosphatase determinations may be more valuable. The chief question at present is when to start œstrogen therapy: Mr. Millin thinks it should be the final rather than the initial treatment, since its benefits tend to be reduced after two or three years. He is inclined to treat in three stages (1) total prostatectomy (2) perurethral resection plus orchidectomy, and (3) stilbœstrol therapy—waiting for symptoms to recur before starting the next phase of treatment. Orchidectomy results in increased gonadotropin and 17-ketosteroid excretion, pointing to pituitary over-activity and adrenal stimulation; œstrogens have the opposite effects. Stilbœstrol is given in doses of 6 mg. daily for the first three weeks and afterwards reduced to 3 mg. or less daily. Toxic manifestations such as nausea and œdema of the lower limbs are occasionally found. Side-effects such as gynecomastia and loss of libido are common but not usually complained about.

Mr. E. W. Riches analysed 20 cases which have all been under treatment for between two and three years. Of these 5 died of cancer and 2 of other complaints, while 13 are still alive. Of the 7 that died 6 had metastases, compared with only 4 of the 13 survivors; stilbœstrol alone will not prevent or cure bony metastases though visceral or glandular metastases may disappear during treatment. He finds acid phosphates determinations valuable; if raised they point to the presence of bony metastases. There is however an undoubted tendency for patients to start going downhill after two or three years in spite of continued œstrogen treatment. The doses of stilbœstrol used are 1 mg. thrice daily, rapidly rising to 5 mg. daily which is reduced when the serum acid phosphatase is down to normal levels.

Mr. P. C. Williams, speaking as a laboratory endocrinologist, thought that pituitary depression is the most likely explanation of the action of œstrogens; the doses given agree with those used in animals for this purpose. The search for compounds without œstrogenic activity yet capable of depressing pituitary function is in progress but so far without success.

Dr. S. L. Simpson stressed the importance of the adrenals as a source of androgens and thought that the urinary ketosteroid secretion should be estimated in cases of prostate cancer so that the role of the adrenals may be more clearly understood. American workers on the other hand have reported the regression of implanted tumours in mice injected with 17-hydroxy-11-dehydrocorticosterone.

Mr. A. Dickson Wright reported briefly several of his own cases, including one of a tumour of the breast which responded well to œstrogens.

Mr. R. Ogier Ward inquired whether stilbœstrol labelled with carbon isotopes could not help in elucidating the mechanism of action. Professor Dodds replied that this is a considerable research project which he hopes will be undertaken, but it will be some years before any results can be obtained. Mr. Millin referred to American work showing that X-irradiation of the pituitary has the same action as stilbœstrol in prostatic cancer, which is further evidence that œstrogens act by pituitary depression.

Early Rising in the Puerperium

Rosenblum and others (*J.A.M.A.*, **129**:849, 1945) observed that delivered women can safely and advantageously get up early in the puerperium with no harmful results occurring. Bowel function particularly is improved as a result of early rising in the puerperium. Early puerperal rising reduces the amount of nursing care required. The majority of patients managed in this way reported favourably on the method.

The statistics show no particular advantage to third or fourth day puerperal rising as compared to the earlier first and second day figures.

They opine that early rising results in more rapid and comfortable convalescence with less asthenia and less postoperative and postpartum depression.

They hope that this study will encourage further interest and continued observation on the question of early puerperal rising which may eventually clarify this still unsettled problem.

Rest Between Pregnancies

Eastman (*J. A. M. A.*, **125**:1092, 1944) says that in a recent study it has been shown that the longer the interval between births the more likely is the mother to suffer from some form of hypertensive toxæmia. The incidence of this complication is found to be lowest when the interval is 12 to 24 months, definitely higher when it is 24 to 48 months and much higher when it exceeds four years. In patients, too, who have had a previous hypertensive toxæmia of pregnancy, the likelihood of a repetition becomes progressively greater as the interval becomes longer. The incidence of premature labour, anæmia, post-partum hæmorrhage and puerperal infection is no greater when the interval is 12 to 24 months than when it is longer, nor are mothers in this brief interval group less capable of nursing their infants.

Vitamin B_1 Deficiency in Infants

Krishnan and others (*Indian M. Gaz.*, **80**:521, 1945) writes that (1) a public health experiment which has as its objective the treatment and prevention of infantile beriberi is proceeding in Cocanada. The work has been carried out at an infant welfare centre in that town.

(2) It has been found that infantile beri-beri is a common disease in breast-fed infants. It can be successfully treated by the injection of pure vitamin B_1.

(3) An attempt was made at prevention by the administration of the vitamin to expectant and nursing mothers, the prophylactic dose being I milligram of vitamin B_1 daily. While this treatment was not without effect, the dosage employed appeared to be too small for the fully effective prevention of vitamin B_1 deficiency in infants.

(4) The public health aspects of the problem are discussed, and it is recommended that curative centres should be established elsewhere in the beri-beri area.

Primary Tuberculosis in Childhood

Gaisford (*Brit. M. J.*, **1**:84, 1946) writes that primary tuberculosis is important because it is the commonest manifestation, because it is often difficult to diagnose, because it most easily leads to the tracing of the adult infector, and because when adequately treated it gives excellent results. As is well known, it is usually intrathoracic and due to direct droplet infection or, in the case of crawling infants, to infected dried dust from the floor or carpets of a house where a phthisical adult lives.

The ordinary symptoms of adult tuberculosis—cough, fever, night sweats, loss of weight, sputum and hæmoptysis—are not common symptoms in primary tuberculosis in infants or children.

In fact, the condition is often subclinical throughout, and there are no characteristic physical signs which can be considered pathognomonic.

Erythema nodosum and phlyctenular conjunctivitis are two commonly encountered conditions in pædiatrics, and they are both very suggestive of primary tuberculosis. The younger the child the more likely are they to be tuberculous. They are not in themselvse tuberculous, but are manifestations of tuberculin allergy.

X-rays are of value in the diagnosis of primary tuberculosis, especially serial films, as there are few other causes of persisting abnormal lung shadows in childhood.

The tuberculin test is the only sure diagnostic test. It is impossible to diagnose primary tuberculosis with certainty without its use (except by actually finding tubercle bacilli—as, for example, in stomach washings). Often it is the only positive finding at the time of examination, and further confirmation may not be forthcoming for months till skigrams reveal a parenchymal or glandular lesion.

It has been said, "If 100% be allotted to the Mantoux test in the diagnosis of primary tuberculosis, then x-rays earn 25% and physical exaxmination a fraction of 1%." Finding a positive reaction does not mean that the child is necessarily suffering from tuberculosis, but it does mean that he should be further investigated—first by skiagrams; if these show any abnormality a blood sedimentation test may give some indication of activity, and gastric lavage and guineapig inoculation may yield confirmatory evidence.

There is abundant evidence that repeated exposure during the initial period after infection tends towards severe disease and liability to miliary spread. Therefore, children and especially babies, should be carefully watched for three months until the likelihood of meningitis is passed, and should be separated from any known contact.

There is, again, ample evidence that breaking the contact materially lessens the mortality and morbidity.

Either spontaneously or with treatment it may undergo fibrosis and calcification and heal completely. This is usual. Untreated, it may proceed to caseation in the primary focus, bronchogenic spread, glandular spread in the hilum, or blood-spread with resultant metastases. ,

The majority of cases quiesce, but age is the important factor. The death rate is higher in the first two years of life than at any other period of childhood, because of lower resistance and greater and more repeated exposure (due to the intrafamilial nature of the infection).

Extrathoracic foci of primary infection—the alimentary tract is the chief site. Infection follows ingestion of bacilli, either human from dried dust or bovine from milk. The primary focus is in the ileum in the region of Peyer's patches, and the complex is completed by the mesenteric gland draining that area. As in other extrathoracic foci, the primary lesion is usually microscopic. The tendency is for the lesion not to localize as well as a primary pulmonary focus, and there is a danger of meningitis by rupture of the caseating mesenteric gland into a mesenteric vessel. Normally the gland calcifies.

The presenting signs and symptoms of the intrathoracic cases were bronchitis and pneumonia, pleural effusion, wasting, erythema nodosum and phlyctenular conjunctivitis, and diarrhœa.

The most important thing is rest in bed until the blood sedimentation rate is normal and skiagrams show evidence of healing or the lesion appears quiescent; then fresh air, good food, adequate amounts of vitamins A, C, and D, and not too much fat and "malt and oil," which are often given to the detriment of the appetite.

Abolition of Rickets

In the British Isles the incidence of rickets among children below the age of six months is 2½%, and among those in their first year 4%. Small as this figure is rickets is preventable, so there is no reason why it should occur at all. With this as a maxim, the British Pædiatric Association have surveyed on practical lines our present knowledge of rickets; and the Ministry of Health and the Department of Health for Scotland have issued their report as a memorandum for the use of medical officers, health visitors, midwives, and district nurses.

After defining rickets as a disorder of calcium and phosphorus metabolism due to defficiency of vitamin D, the memorandum reviews the diagnostic value of symptoms at different ages. Thus at the age of 3-4 months craniotabes is valuable evidence; at 6-7 months the rickety rosary is the predominant sign; while enlargement of the wrists and abnormalities of dentition only come into the picture later in the first year. Nowadays rickets usually heals during the second year of life unless the nutritional defect is severe. Bowing of the legs, pot-belly due to muscular hypotonia, head-sweating, and nervous signs, are present only when the disease is severe. The presence of mild rickets can be confirmed radiologically by examination of the distal ends of the forearm bones.

The memorandum is usefully dogmatic about prophylaxis: "To guard against dietary deficiencies, and because breast feeding is no certain preventative of rickets, all infants, however fed, should receive a supplement of vitamin D. When it is realised that any rapidly growing infant is, as it were, on the verge of developing rickets, the importance of this becomes obvious."

The memorandum then suggest that, broadly speaking, 500-800 international units daily of vitamin D should prevent rickets, and reminds readers that cod-liver oil BP contains 330 I.U. per drachm, the Ministry of Food cod-liver oil compound 750 I.U. per drachm, and cod-liver oil and malt only a small and variable quantity. The under-weight or premature infant needs at least as much vitamin D as one of normal birth-weight—in fact, double the usual dose is recommended, though it should be reached gradually. In active rickets ultraviolet raidation should be used to supplement vitamin D.—*Lancet*, **2**:568, 1945.

NOTES & NEWS

MEDICINE IN INDIA IN THE POST-WAR ERA

Professor Henry E. Sigerist, Director of the Institute of History of Medicine Johns' Hopkins University, Baltimore and Professor of History and Sociology of Medicine, who toured India as one of the Foreign Experts and Advisers on Medical Education, writes in the Bulletin of the History of Medicine, Vol. XVII, No. 2, February, 1945, a thoughtful article on "The Need for an Institute of the History of Medicine in India". His observations on the present state of Medical Relief in India and his historical and scientific approach to the problem—the basic conflict between the indigenous and scientific system of medicine in India—are bound to be read with wide interest by the medical profession as well as the politicians and educated Indians.

Prof. Sigerist writes: "In a country such as India a centre of studies in the history of medicine is more necessary than anywhere else, because in India, ancient and mediæval medicine are still alive and are practised on a large scale. It is no exaggeration to say that the overwhelming majority of the people of India receive medical care only from indigenous practitioners. They either follow the principles of the "Ayurveda"—the Science of Longevity—as it developed in the Atreya school of Brahmin doctors over two thousand years ago; or they are adepts of the "Unani", or Greek school of medicine which actually is Arabo-Persian medicine—to mention only the two major systems.

"The fact that indigenous medicine plays such a very important part in the life of the Indian people is frequently minimized or even ignored. And yet it represents a very tangible reality that must be faced openly whenever plans are elaborated for improving the health conditions of the country, particularly since its popularity is growing rather than diminishing. New indigenous schools are being founded. They are subsidized by the government in several provinces.

"At first sight it seems strange that these ancient indigenous systems are able to compete with modern scientific medicine. It was not strange in the 17th and 18th centuries when the two worlds first entered into contact. At that time European medicine was developing new theoretical foundations but in practice, in the treatment of disease it was hardly more effective than Greek, or Hindu, or Arabic medicine. But to-day? Nobody can deny that scientific medicine during the last hundred years has made tremendous strides. Bacteriology and immunology have permitted us to combat communicable diseases most effectively and to eradicate many of them. Modern surgery is able to save thousands of human lives that would have been lost only fifty years ago. Pediatrics, more than any other branch of medicine, is responsible for the decrease of death rates and for the greater life expectancy. The treatment of internal diseases, for a long time the step-child of medicine, has greatly progressed also. The discovery of hormones and vitamins made it possible to attack certain diseases at the root, and in the last few years the sulpha-drugs and penicillin have proved to be formidable weapons in the treatment of many formerly deadly diseases. How then was it possible for indigenous medical systems to survive?

"The reasons are not difficult to find. India with its 19 University Medical Colleges and 19 Medical Schools has produced physicians trained in scientific medicine, but not enough of them. It is impossible for 55,000 doctors to give medical care to a population of nearly 400 million, particularly since economic necessity forces the majority of doctors to practise in the cities, while 90 per cent of the people live in rural districts. The sick villager, therefore, has hardly any choice; if he wants help and advice he must have recourse to an indigenous practitioner.

"There are Rural Dispensaries operated by the provincial or local governments, staffed with scientific doctors. These dispensaries, however, are as a rule very poorly equipped; the doctor sees hundreds of patients every day, so that he has not the time to examine the sick and to treat him individually. He can at best practise a primitive type of first-aid and bottle-medicine which are hardly apt to demonstrate the superiority of Western medical science. The salary of the dispensary doctor, moreover, is so miserably small, that he is forced to make a living through private practice. But the average villager is too poor to pay for his services and to purchase his imported chemical drugs. And so the sick call on the indigenous practitioner who himself is a villager, whose drugs consist of native herbs that are cheap, and whose theoretical views conform with the religious views of the patient.

"The indigenous systems of medicine, both Ayurveda and Unani are strongly philosophical in outlook, although their original character has degenerated in many ways. The theory of the three elements in one, of the four humors in the other, are attempts to visualize the organism as a microcosm and to place it into relationship with the macrocosm of the universe. Hindu philosophy as it crystallized in the system of the Tantras, looks at the human body and at the universe as a manifestation of divine substance and energy, a concept the elements of which can be traced back to Vedic traditions. The three elements wind, bile, and phlegm are symbols of the ærial, fiery, and liquid forces of life-energy. Throughout its history Ayurvedic medicine was an attempt to interpret the phenomena of life and death, of health and disease, philosophically.

"Unani medicine, on the other hand, through the Persian and Arabic tradition goes back to Galenic, Hippocratic and Pythagorean views and having passed through the filter of Avicenna, it acquired many elements of Aristotelian philosophy.

"Indian culture is deeply imbued with philosophy, and this is why not only illiterate villagers but highly educated men sometimes prefer the indigenous systems of scientific medicine and rise to their defence. They claim that the medicine that came from the West is too mechanical, that it is soulless, that it has no philosophy, that it is foreign to Indian thought, while the indigenous systems are deeply rooted in the religious and philosophical traditions of the country, and represent one aspect of the general attitude toward nature and man.

"There is another most powerful force that is backing the indigenous systems of medicine, Indian nationalism. The country is in a period of transition. After centuries of stagnation the people of India are awakening to new life and look into the future. A regular Renaissance is taking place. A nation which had developed a great civilization at a time when we in the West were still savages, which for certain historical reasons too complex to be discussed here declined, is now reasserting itself.

"At such a historical moment the people look back with pride to their cultural heritage. It is the common ground on which they stand. The classical literature is published in new editions. The cinema instead of filming gangster stories revives

Sakuntala. Young girls dye their palms and soles with henna and re-enact old dances. The country's archæological remains are carefully preserved, tactfuly restored, and visited by thousands. Hindus and Moslems, Sikhs and Parsis alike admire the paintings of Ajanta, the sculptures of Elefanta, the temples of Madura and the palaces of the Mogul emperors. They justly feel, beyond communal lines, that they are theirs.

"And when it comes to medicine, they remember their history also. Just as we look to Hippocrates as the father of medicine, they look to their own classics to Caraka, Susruta, Vagbhata who collected and preserved the medical lore of their time; or to the classics of Arabic and Persian medicine who in the early Middle Ages had assimilated, enriched and systematized the Greek tradition and were far ahead of their colleagues in the West. Indians remember with pride that in the 3rd century B.C. Asoka, the great Buddhist Maurya king had provided medical services for rich and poor, for men and animals, throughout, his empire; that he had hospitals built in town and country, for men and animals, at a time when there was not a single hospital in the Western world.

"This great medical tradition is not dead. It is alive like the Vedas, the Upanisads or the immortal Meghaduta, like the Qoran, the Bustan and the Gulistan. It is no wonder that India reasserting itself is backing up its own systems of medicine.

II.

"So far, so good—but medicine is neither poetry nor philosophy. It is a craft, a *tcchne* as the Greeks called it, with an eminently practical purpose. Its goal in every country is the same, namely to promote the people's health, to prevent disease, to restore health when it has broken down, and whenever necessary, to rehabilitate the former patient so that he may remain a useful member of society.

"The question naturally arises: have the indigenous systems succeeded in establishing a high standard of health in India? The question can be answered scientifically because health conditions can be measured and can be expressed in figures. When we consult these figures and find that in 1937 the general death rate was 22·4, the infantile mortality rate 162, and the average life expectancy only 27 years, we must conclude that health conditions are very bad in India to-day, infinitely worse than in countries that have universally accepted scientific medicine.

"It is well known that health conditions are determined not only by the status of medicine but also by the general standard of living—which in India is extremely low. When people have not enough to eat, constantly suffer from malnutrition and live in a poor sanitary environment they are always threatened by disease and have little resistance to offer. Scientific medicine, however, has forged weapons with which it is possible to eradicate diseases even under poor living conditions. The numerous diseases carried by water and food can be brought under control by general public health measures. The various methods of immunization permit the prevention of diseases which to-day still take a heavy toll of life in India, and new methods of treatment can save thousands of human lives that would be lost otherwise. The incidence of malaria, India's great curse, could be reduced considerably if the doctors had enough auxiliary personnel available that they could steer and guide.

"If Indians take a historical attitude toward their indigenous systems of medicine, they will be justly proud in realizing what a great advance these systems represented *at their time*, in antiquity and the Middle Ages. They brought many effective drugs to the people, many valuable dietetic and even surgical treatments. But Indians will also realize that conditions have greatly changed. The new science that developed from the 16th century on created a new foundation of medicine, a new anatomy, physiology and pathology on the basis of which new system of public health and of clinical medicine could be developed with infinitely more effective methods of prevention and cure. The theory of medicine, the views we have of the causes and mechanisms of disease are not a luxury but determine our actions. The concepts of wind, bile and phlegm or of blood, phlegm, yellow bile and black bile represented useful working hypotheses at their time, but the new science has demonstrated that the actions attributed to them are the result of speculation and do not correspond to a reality, while it is possible to explain the phenomena of health and disease with concepts of biology, physics and chemistry in an infinitely more satisfactory way, one that permits testing in experiments and has led to brilliant practical results.

"Indians, therefore, who have the welfare of their people at heart, who want them to live without being constantly fettered by the bonds of disease, cannot but accept scientific medicine and work to promote it and to see it applied on a nation-wide scale so that it may reach every single village. It, of course, is not easy to apply modern science to one field of human endeavour while other basic functions of social life such as agriculture and industry remain mediæval and women are kept in purdah. And this raises the question: is it at all desirable for a nation to accept science and technology or would it be better for the people to remain static, to live poor and contented, bearing sufferings with resignation, leading a contemplative life and hoping for a better lot in the hereafter? The question seems justified in view of the evil use that has been made of science in recent years. It is futile, however, because there is no choice. No nation can expect to survive in the present world as a nation unless it accepts science with all its implications. And science in itself is neither good nor evil. It is an instrument in the hands of man, and it is he who is good or evil.

"India, after centuries of stagnation, is awake today and has expressed its determination to free the people from age old bonds. Thousands of young men and women are flocking to the universities, hundreds of them travel abroad for post-graduate study. Already India has produced physicists, chemists and biologists of world renown. Industries are being developed. The great rivers dammed by engineering skill, will produce water for irrigation and power for new industries that will absorb the rural surplus population. India possesses the manpower and natural resources needed to make it a prosperous country in which the people will be free to produce new cultural values as they did in the past. This may seem Utopian in view of the many traditional barriers of caste and religious taboos that tend to divide the people, but the example of other countries has shown that however rigid the traditional superstructure may appear, it breaks down very rapidly where there is a strong popular movement that attacks the basic elements of economic and social life.

"In the same way scientific medicine must be developed. Promising beginnings have already been made and plans are elaborated for the future. The line to be taken is clear. The country needs more and better trained personnel, researchers,

teachers, doctors and legions of auxiliary personnel. It needs more and better equipment. And it needs first of all a system of health services that will make full use of the personnel and equipment available and will bring it into the reach of everybody.

"Scientifically trained doctors will gradually replace the indigenous practitioners. The argument that indigenous medicine is cheaper will no longer hold, because medicine will not be a service that is sold to the people in the open market, but a public service to which they are entitled, one that is financed on public funds. Similarly the argument that indigenous drugs must be preserved because they are within the financial means of the villager will vanish, because drugs will not be sold but distributed to those who need them, and the development of a state-owned and operated pharmaceutical industry will considerably reduce the cost of production of modern scientific drugs."

DISTRICT FOOD ADVISORY COMMITTEE, U.P.

The U.P. Government having accepted the demand of the U.P. Provincial Branch of the I.M.A. to have representatives of its constituent branches on Local District Food Advisory Committees, District Magistrates have already commenced to ask the branches to send names of their nominees. Capt. H. N. Shivapuri, Hony. Secretary, U.P. Provincial Branch, has, with a view to lay down certain minimum requirements of food which the representatives may follow, consulted various authorities and collected some useful data and circulated them amongst the branches in U.P. in their barest outline. These data with Capt. Shivapuri's comments are published for general information.

A. 1. Minimum requirements for an average adult male at average work in 24 hours 3000 calories. 2. Minimum requirements for an average female 2500 calories. 3. For children aged between 1 and 12, needs vary from 900 to 2400 calories according to age. 4. Children over 14 years require as much as an adult or probably more. 5. Requirements of older people are comparatively less.

B. The calories are to be apportioned as follows:— 1. Proteins 10 to 15 per cent. 2. Fats 35 per cent. 3. Carbohydrates 55 per cent.

C. One gram protein yields 4 calories. One gram fat yields 9 calories. One gram carbohydrate yields 4 calories. (One gram = 1/64 chatak in Indian weight).

D. *Minimum body requirements*—

1. Proteins—75 gm. (at least half of which must be of animal origin *i.e.*, 1st class protein provided by milk, cheese, eggs, meat and fish). (Nutrition Advisory Committee to the Ministry of Health).

2. Fats—100 to 200 gm. varying on the quality of fat. Animal fats contain vitamins A & D and therefore they are superior to vegetable fats or vegetable "ghee" in that respect. Butter, real ghee and cheese are preferable (Aykroyd).

3. Carbohydrates—minimum 300 gm. daily.

4. Mineral Salts—(*i*) Calcium 0·68 gm. for adults and 1 gm. for children daily. (*ii*) Phosphorus—adults 0·88 gm., children 1·5 gm. daily. (*iii*) Iron—adults 0·15 gm., pregnancy 20% extra, infants 0·75 mgm. for every 100 calories of food energy. (*iv*) Iodine—1 mgm. (approx.) daily. (*v*) Copper & Zinc—traces. (Practitioners' Library of Medicine and Surgery).

5. Water—about 2500 c.c. or 6 to 7 tumblers daily.

6. Roughage—supplied by cellulose containing vegetables.

7. Vitamins—A, B, C, D, E (and probably G).

Exact proportions are not easy to determine, but the following articles taken in 24 hours will supply the average body needs.

1 pint of milk, 1 oz. cheese, 1 oz. butter or ghee and either one orange or one tomato or a helping of raw salad (leafy vegetables) (Aykroyd).

The League of Nations Committee on Nutrition has suggested the following minimum requirements:—

(*i*) Vitamin A—400-5500 international units. (*ii*) Vitamin (B_1)—125-200 international units. (*iii*) Vitamin C—700-1000 international units. (*iv*) Vitamin G (B_2)—500-750 international units.

E. The foods can be divided into different heads as per table below:—

TABLE SHOWING CLASSIFICATION OF FOODS (ADAPTED FROM THE LEAGUE OF NATIONS COMMITTEE ON NUTRITION)

	Good Protein	*Minerals*	*Caloric Value*	*Vitamins*
1. *Highly Protective Foods*—				
(*i*) Milk	++	+++	—	A, B, C & D.
(*ii*) Cheese	++	++	—	A & B.
(*iii*) Eggs	++	++	High	A, B & D.
(*iv*) Liver	++	++	High	A, B & D.
(*v*) Fat fish	+	—	High	A, B & D.
(*vi*) Green vegetables & salads	+	+++	—	A, B & C.
(*vii*) Raw fruit & fruit juices	—	+++	—	A (if yellow in colour), B & C.
(*viii*) Butter or ghee	—	—	High	A & D.
(*ix*) Cod Liver Oil	—	—	—	A & D. (very rich in both)
2. *Less Protective Foods*—				
(*i*) Yeast	+	+	—	B.
(*ii*) Meat (muscle)	+	traces	—	B & C. (traces)
(*iii*) Root vegetables (tubers)	—	—	—	A (if yellow in colour), B & C.
3. *Non-Protective Foods*—				
(*i*) Legumes (dry peas, dals etc.)	—	—	—	B.
(*ii*) Cereals, whole-meal bread	+	traces	High	A (traces) and B.
(*iii*) Cereals, white bread	—	—	High	—
(*iv*) Cereals, rice polished	—	—	High	—
(*v*) Nuts	traces	—	High	B.
(*vi*) Sugar, jam, honey	—	—	High	—
(*vii*) Vegetable oils or vegetable ghee	—	—	High	—

Milk is very necessary for vegetarians for supply of animal protein and fat. Cheese, which vegetarians can safely take to make up for animal protein and fat, should be popularised.

F. A sample diet for India is shown in the following table:

For vegetarians 2 ozs. of mutton should be replaced by either 5 ozs. of milk or other equally nutritious food containing

TABLE SHOWING A SAMPLE DIET FOR INDIA (ADAPTED FROM MC CARRISON)

Food-stuff	*Amount in Oz.*	*In Grammes*			
		Protein	*Fats*	*Carbohydrate*	*Calories*
1. Atta	12	46·80	6·48	244·2	1222
2. Rice: home pounded	6	13·80	0·51	133·8	595
3. Meat (mutton)	2	11·94	3·96	—	84
4. Milk	20	18·80	20·40	27·2	360
5. Vegetable oil	1	—	28·00	—	252
6. Ghee	1·5	—	34·60	—	312
7. Root vegetables	8	4·40	0·36	31·8	148
8. Cabbage or green vegetables	8	3·10	0·24	10·2	56
9. Mango or other fruits	4	0·16	0·88	20·8	92
10. Dal	1	6·50	0·99	16·2	100
	63·5	105·50	96·42	484·2	3221
Less 10% for waste	6·3	10·50	9·64	48·4	322
Total ..	57·2	95·00	86·78	435·8	2899

N.B. 1 chattak = 2 ozs. = 64 grammes.

animal protein such as cheese 1 oz. For those who take eggs, fish etc., the quantity of cereals can be reduced proportionately.

In these days of rationing, when total effective quantity of cereals available is only 8 ozs. the diet will have to be supplemented in other ways, as by addtion of meat, fish and eggs in the case of non-vegetarians and by milk, cheese, tubers (as potato) and legumes (as dal and peas etc.,) and nuts in the case of vegetarians.

There is one objection against this diet *i.e.,* it is too expensive for the great majority of our population. There is no doubt about this, and that is why majority of our countrymen and countrywomen suffer from undernutrition and consequential diseases. The solution of this problem lies only in raising the economic standard of the people of this country and in mass production and thus cheapening (compared to present rates) the main articles of diet, particularly those called "Protective Foods". But these solutions are only possible when there are National Governments both at the Centre and in the Provinces, particularly at the Centre.

G. *Effect of Heat on Vitamins*

Vitamins are usually associated with raw foods, but in point of fact the only vitamin likely to be destroyed by *ordinary cooking,* is vitamin C. On the other hand, it is true that fresh green leaves contain all the important vitamins. (Aykroyd).

CARDIOLOGICAL SOCIETY OF BENGAL

The Cardiological Society of Bengal has been formed recently at Calcutta for the advancement of scientific knowledge about cardiovascular system in all its aspects.

The Society has taken up the following plan of work for the current year:—

(1) Refresher Course in Cardiology from August, 1946. (2) Taking up of research work and helping other workers on certain definite subjects of cardiological interest. (3) Publication of a quarterly bulletin.

The following office-bearers have been elected for 1946-47:

President—Dr. B. C. Roy, M.D., D.SC., M.R.C.P., F.R.C.S. Vice-Presidents—Drs. S. C. Bose, M.B., M.R.C.P., D.T.M. (LOND.), and U. P. Basu, M.B., F.R.C.P. (I). Hony. Secretaries—Drs. J. C. Gupta, M.B., M.D. (COLOGNE); and A. K. Bose, M.SC., M.B., M.R.C.S. (ENG.), M.R.C.P. (LOND.). Hony. Asstt. Secretaries—Drs. T. K. Ghosh, M.D. and H. K. Roy, M.D. Hony Treasurer —Dr. P. Brahmachari, M.SC., M.D., P.R.S.

BRITISH JOURNAL OF PHARMACOLOGY AND CHEMOTHERAPY

The British Pharmacological Society proposes to establish a new journal with the above title, and the first number will appear in 1946. The journal will be published by the B.M.A.

The journal will publish original work in all branches of pharmacology and experimental chemotherapy, including the biochemical and pathological aspects of this subject. Provision will also be made for shorter communications and for brief notes on technique.

The British Journal of Pharmacology and Chemotherapy will be edited by the following Board: J. H. Gaddum, chairman (Professor of Pharmacology, Edinburgh University); J. H. Burn (Professor of Pharmacology, Oxford University); F. Hawking (of the Research Staff of the Medical Research Council); H. R. Ing (Reader in Pharmacological Chemistry, Oxford University); N. Mutch (Physician to Guy's Hospital); C. M. Scott (Director of the Pharmacological Laboratories, Imperial Chemical Industries Ltd.); F. R. Winton (Professor of Pharmacology, University of London); and the Editor of the British Medical Journal.

Each volume will consist of four quarterly parts and will cost 25*s.* Subscriptions, payable in advance, should be sent to the British Medical Association, B. M. A. House, Tavistock Square, London, W.C.1.

INCOME TAX CREDIT FOR CHARITY PRACTICE OF PHYSICIANS

The value of the services rendered annually by physicians of this country in the treatment of the indigent sick for which they receive no compensation has been estimated as in excess of $300,000,000. Recognition of this tremendous contribution made by physicians for the public good is reflected in a bill, H. R. 5296, introduced in the Congress, January 30, Representative Claire Boothe Luce of Connecticut. The measure provides that physicians, surgeons and dentists, commencing with the taxable year 1946, shall be allowed an additional credit as a deduction on their income tax equal in terms of percentages to that portion of their time each year which is devoted to charity, free clinic work and public research work. The Commissioner of Internal Revenue will prescribe by regulation, it is contemplated, the method of computing such time and the proof which shall be required in substantiation.

At the time the bill was introduced, Representative Luce had inserted in the Congressional Record a statement embodying the justification for her sponsorship of this legislation. In connection with the many proposals being made for various kinds of governmental control of medicine, she said:

> None of these proposals is a logical development of the American system of recognizing, promoting and rewarding individual choice and achievement. In our earlier history pioneer medicos were rewarded for their frequently ill paid devotion by a very special place in the community, high respect from their fellow citizens and patients, and payment in lovingly prepared delicacies where cash was scarce. Those times have largely vanished. To become a doctor, a surgeon, a dentist now requires some eight or nine years of unremunerative and expensive schooling. Until he has completed all this, usually by the time he is 29 or 30, the doctor cannot even begin to earn his own bread and salt, much less begin to repay himself for the costs of learning his profession.

After referring to the fact that all reputable physicians give a considerable portion of their time to the treatment of patients who are unable to pay for the services in any way except by gratitude the statement continues:

> Surveys as to the amount of these unpaid services indicate that the percentages range from around 30 to 45 of all treatments given. This is a direct contribution on the part of the physician, surgeon or dentist to the public welfare. In addition are the hours spent without pay in public research work, on hospital boards and on boards of charitable organizations. All this must be chalked up to professional devotion, since it results in no return and often requires the practitioner to lengthen his working day to fifteen or sixteen hours or more in times of epidemic. There are no limits possible on a doctor's working day.

Because of the facts so well set forth in her statement Representative Luce believes that the recognition contemplated by her bill is fully justified. This measure is pending before the House Committee on Ways and Means, where, it may be assumed, it will be given consideration by the committee in connection with its program to revise the income tax law.—*J.A.M.A.*, **130**:350, 1946.

THE STETHOSCOPE *versus* X-RAYS

The discussion on this subject at the Royal Society of Medicine on Nov. 27 showed remarkable unanimity between physicians and radiologists. It was agreed that the stethoscope had reached its final limits, and that its clinical applications could now be defined and modified. The presence of added sounds, detected by a competent physician, is of immense importance, both in cases where an indifferent x-ray photograph fails to reveal disease or where a non-obstructive bronchial lesion cannot produce a radiological opacity. Auscultation can also yield strong presumptive evidence of activity in cases of tuberculosis which radiologically appear to be healed. Two valid, if unusual, arguments in favour of the stethoscope were (1) that its use had a good psychological effect on the patient and (2) that it acted as a check on the reliable marking of x-ray films. Cases were quoted where the wrong name was put on a radiogram and auscultation saved the patient from unnecessary treatment. It is true that despite many ingenious devices there is still no method of completely eliminating the possibility of human error in the identification of radiograms.

Both physicians and radiologists agreed that the stethoscope is valueless in the majority of cases of early pulmonary disease and that this fact should be emphasised throughout the student's career. It was considered by many that far too much stress is laid on obsolete stethoscopic signs both in hospitals and at examinations, so that the student gets a false sense of their value and is inclined to assume that disease is not present when auscultation is negative. It is likely that failure to obtain an x-ray examination of the chest in a patient with suspicious symptoms will be regarded as legal negligence. A physician's suggestion that students should be taught the normal x-ray appearances of the chest in their pre-clinical days brought a chilly response from the radiologists, who realised that their experience and rapidly developing technical improvements gave them less confidence and faced them with more and more complex problems in the differentiation of the normal and the abnormal. The potential advances in chest radiography were discussed at length and supported this argument. It was pointed out that the present x-ray picture of the chest may soon be regarded as a rough and crude image. Advances in power units and metallurgy will soon lead to the use of large condenser discharge machines and tubes with a focal spot measured in fractions of a millimetre, so that not only a great increase in detail but double and quadruple magnification of suspected areas may be obtained. Such improvements might require reorientation of interpretation of chest radiograms.

One point was raised which may have a considerable bearing on hospital finances. It was stated that the majority of errors of radiography are due to inadequate use of the method. Although it is well known that many lesions can be hidden in the mediastinum, a lateral view which will reveal such lesions is not carried out as a routine. It was also shown that the combination of postero-anterior and antero-posterior views will uncover small areas of disease concealed by the ribs and breasts, and it was suggested that an adequate initial examination should comprise three views. Such a procedure would greatly increase costs, but it was argued that the cost of chronic pulmonary disease is so colossal that any method leading to its earlier detection would warrant the expenditure.

The comparative value of radiology and the stethoscope in cardiology was not discussed in detail, and it was admitted that radiology lagged far behind. Fluoroscopy now plays an essential part in the examination of the heart, but it was suggested that future developments in radiology would result in an increasing use of the x-ray machine at the expense of the stethoscope.—*Lancet*, **2**:784, 1945.

MEDICAL COUNCIL OF INDIA

History

The establishment of medical colleges at Calcutta and Madras in 1835 marked the beginning in India of State-organized education in the Modern Medical Science. Ten years later, the Grant Medical College was opened at Bombay, and in 1860 a medical college was started at Lahore. Although a number of medical schools sprang up, to provide training for Hospital Assistants and Sub-Assistant-Surgeons, later known as Licentiates, it was not until 1906 that the need for expansion of the teaching for the university standard was recognised. The Medical College at Lucknow was established in 1911 which example was followed by other centres, and the year 1925 saw ten university medical colleges in India including the Lady Hardinge Medical College exclusively for women at New Delhi. In the early days the medical colleges granted their own diplomas, but in 1857 the medical college at Calcutta became affiliated to a University and others followed suit.

There was no central or provincial body to register the qualified medical men, to improve their status and standard of education and to regulate the practice of scientific medicine in the country. The medical education was in the hands of the members of the Indian Medical Service who were qualified in the United Kingdom. In 1892, Part II of the British Medical Act, 1886, which conferred on the General Medical Council the duty of ascertaining the sufficiency of the examinations leading upto the qualifying examinations, was applied to India, and before 1920 the General Medical Council had accepted for registration the degrees and diplomas of the Universities of Bombay, Calcutta, Lucknow (Allahabad), Madras and the Punjab. Between 1912 and 1936, except the North-West Frontier Province and Sind, all the Provinces in British India enacted their Medical Registration Acts in pursuance of which Medical Councils were established in each Province. These Councils, however, were concerned only with the standard of medical education in their respective provinces. There was thus no central or other co-ordinating authority empowered to maintain a minimum uniform standard of medical education for the whole country. Therefore, in 1921, the General Medical Council addressed a questionnaire to those Indian Universities whose qualifications were recognised by it, and from the replies received, that Council felt that the teaching of mid-wifery did not, except in Madras, reach a standard which would be recognised for a University in the United Kingdom. In 1922, on the invitation of the Secretary of State for India, Sir Norman Walker visited India. In his report he expressed the opinion that each University could bring its regulations sufficiently in accord with the requirements of the General Medical Council to enable that Council to continue to recognise its diplomas. Consequently, Colonel Needham was appointed as Inspector of Medical Teaching in the Indian Universities and on his reports, the General Medical Council continued to recognise the Indian degrees. The Calcutta University did not agree to such inspections by an outside authority, and therefore the General Medical Council withdrew recognition of the qualifications of that University from the 30th November, 1924, which was however resumed from the 13th May, 1928. The necessity for a Central Co-ordinating Body was more keenly felt after the Great War, as some colleges were unable to attain the uniform standard required by the General Medical Council and regular inspections by that Council were resented. Early in 1926 a non-official Bill dealing with the subject was introduced in the Council of State, but as it met with opposition in various quarters, it was dropped. Sir Norman Walker again visited India, and in 1928 the question was taken up by the Government of India, and subsequently in July, 1929, a Conference of provincial representatives was convened. As the Conference was opposed to the establishment of such a central authority, the matter was again dropped for the time being. Meanwhile, to meet the criticisms and objections of the General Medical Council of the United Kingdom, which, since 1922, had been recognising the Indian degrees for limited periods only on the basis of reports submitted by the Inspectors appointed on its behalf and who in 1927 expressed itself in favour of the establishment of an All-India Medical Council with which it could deal direct, the Government of India proposed instead to appoint a whole-time Commissioner of Medical Qualifications and Standards in India. In view of the opposition the proposal evoked, both inside and outside the Legislalative Assembly it had to be abandoned. The abandonment of this proposal and the non-acceptance by the General Medical Council of an alternative proposal for the appointment, as a temporary measure pending the establishment of an All-India Medical Council, of a Board to supervise medical qualifications, led the General Medical Council in February, 1930, to withdraw the recognition of all the Indian Medical Degrees. This decision of the General Medical Council completely changed the whole atmosphere and made it imperative to establish a Central Council. Accordingly, in June 1930, a second Conference consisting of the representatives of Provincial Governments and of all the Indian Universities, was convened by the Government of India, and it was resolved that the establishment of an All-India Medical Council was essential and acceptable to it in principle and that a Bill should be drafted and legislation undertaken to bring the Council into existence. Accordingly, a Medical Council Bill was introduced in the Legislative Assembly in September, 1932, and was referred to a Select Committee. The Bill was passed in the Autumn Session of 1933 and the Indian Medical Council Act No. XXVII of 1933 was brought into force with effect from November 1, 1933. In pursuance of this Act, the Medical Council of India came into existence on February 15, 1934.

So much for the history of the formation of the Council. Let us now turn towards its constitution and achievements since its inception.

Constitution and Functions

The constiution of the Council was slightly changed under the Adaptation of India Laws—Order 1937, and now it is composed of:—

(*a*) One member from each Governor's Province nominated by the Central Government.

(*b*) One member elected by each British Indian University having a Medical Faculty, to be elected from amongst the members of the Medical Faculty.

(*c*) One member from each province where a medical register is maintained to be elected from amongst themselves by persons enrolled on the register who possess recognised medical qualifications or medical qualifications granted by a British Indian University.

(*d*) Four members to be nominated by the Central Government.

For the first four years of the Council's constitution the President was nominated by the Governor-General-in-Council. Major-General Sir C. A. Sprawson, C.I.E., K.H.P., I.M.S., was

nominated as the first President, and he held office till February 13, 1937, save for 4½ months when Major-General Sir Frank Connor, D.S.O., K.H.S., I.M.S., was nominated in his leave vacancy. After the former's retirement Major-General E. W. C. Bradfield, C.I.E., O.B.E., K.H.S., I.M.S., was nominated, and in February, 1938, he was elected by the Council as its first elected President. He was succeeded by Dr. B. C. Roy as the first non-official President and in October 1945, Dr. Abraham S. Erulkar was elected to this office.

The Secretary was nominated by the Governor-General-in-Council for the first four years from the commencement of the Act. Mr. Farquhar Macrae, M.B., C.M., was the first nominated Secretary and in May 1935 he was succeeded by Lt.-Col. G. T. Burke, I.M.S. From November 1, 1937, the Council appointed Khan Bahadur Dr. K. A. Rahman, O.B.E., as its Secretary, who in February, 1946, was succeeded by Khan Bahadur Dr. A. H. Butt.

The Vice-President and the members of the Executive Committee are elected by the Council from amongst its members. The Executive Committee consists of seven members of whom five are elected by the Council and the President and the Vice-President are *ex-officio* members and are also President and Vice-President respectively of the Executive Committee.

A member of the Council holds office for a term of five years and under the Regulations framed by the Council the term of office of the Vice-President and the members of the Executive Committee has been fixed for two years.

The medical qualifications recognised under the Act are contained in two Schedules. The First Schedule is composed of medical qualifications granted by medical institutions in British India and the non-Indian medical qualifications are given in the Second Schedule. Inclusion in the latter Schedule is sufficient qualification for enrolment on any Provincial Medical Register.

The Schedules are attached as Appendices I and II.

The functions of the Council fall under two heads:—

(1) The maintenance of a uniform minimum standard of higher medical qualifications for the whole of British India; and

(2) The furtherance of the recognition of these qualifications in States and Countries outside British India, with its corollary, the recognition in this country of approved qualifications of such States or Countries.

(1) Immediately after its constitution, the Council drew up its Recommendations on Professional Education and on Professional Examinations. In view of the latest developments in and suggestions for the improvement of the medical curriculum, a revision of the former was undertaken in 1936. The modified Recommendations came into operation from 1940. With a view to uniformity in the syllabus of the pre-medical courses, the Council appointed a Board of Experts who formulated the minimum requirements in the Basic Scientific Subjects, a copy of which has been forwarded to the Inter-University Board for necessary action. The Council has also laid down minimum qualifications necessary for appointment of teachers in a medical college.

The first round of inspections of courses of instruction and final examinations of all the British Indian Universities was carried out between 1934 and 1938, as a result of which much improvement was effected and the qualifications of all the Universities are now included in the First Schedule. On the recommendation of the Council the M.C.P.S. qualification granted by the College of Physicians and Surgeons, Bombay, has also been placed on the Schedule and recognised when granted after the 30th April, 1944. The Council has been engaging itself in inspecting the courses of instruction, facilities for teaching and examinations in the pre-clinical and clinical subjects as well.

In consequence of the Council's recommendation to the Central Government to ask the Provincial Governments either to abolish the medical schools or raise them to university standard, the Agra Medical School, Stanley Medical School, Madras, and Amritsar Medical School, have been raised to college standard. Steps in this connection are being taken in other Provinces and new colleges are also being established under the post-war reconstruction schemes.

By an amending Act 1942, powers have been vested in the Council to appoint visitors in addition to Inspectors.

The Women's Christian Medical College, Ludhiana, and the Glancy Medical College, Amritsar, were visited on behalf of the Council. The Council has inspected the Agra Medical College and before deciding the question of the recognition of the M.B., B.S. degree granted by the Agra University, the Council has appointed visitors in order to find out as to how far the necessary improvements as pointed out by the Inspectors have been given effect to.

The Council accorded temporary recognition to certain qualifications, *viz.*, D.M.S. Madras, L.M.S. Punjab State Medical Faculty, M.S.M.F. Punjab and U.P., M.M.F. Bengal, for purposes of recruitment to the Emergency Cadre of the I.M.S. After a visitation, the M.B., B.S. degree granted by the Osmania and Mysore Universities was also given similar temporary recognition as a war measure. As regards permanent recognition, the Osmania Medical College was inspected on behalf of the Council and the inspection reports are under consideration. The Mysore University is not yet ready for inspection. For Emergency Commissions, the cases of the holders of foreign qualifications not recognised by the Council were disposed of on individual merits by the President.

The Exexcutive Committee of the Council did not approve of the Government's suggestion that during the war the period of training of medical students should be cut short or the standard of examinations lowered. It was, however, decided that if a member of the staff of a Medical College joined the Army, his work might be carried out by the senior students provided suitable arrangements were made to continue their studies.

In 1937, the Council made recommendations regarding admissions of Licentiates to the M.B., B.S. degree. In 1943, certain concessions were allowed operative during the war and three years thereafter. These were followed by further concessions and the periods of training of the different categories of Licentiates for the degree have been clarified. The Council has been moving the Universities in this connection and as an interim measure requested the Central and Provincial Governments to take steps to provide suitable teaching facilities to the Licentiates to obtain the M.B., B.S. degree by utilising as far as possible the existing medical schools and colleges as well as by establishing new institutions wherever possible and necessary.

The Council's proposal for an All-India Medical Register is receiving the consideration of the Central Government. It is intended to include Licentiates as well as Indian National

holders of foreign qualifications not recognised by the Council but borne on the Provincial Registers upto a fixed date.

In 1937, the Council made a survey of the teaching in the subject of Midwifery and the information so collected was compiled in a pamphlet. A further survey was made in 1942.

The Council has invited the attention of the Universities to the desirability of paying special attention to the teaching of Orthopaedics on account of the growing importance of this branch of surgery especially due to war.

The Council has suggested to the universities that special instruction in diagnosis and treatment of Leprosy on modern lines be provided for the students of the medical colleges.

(2) With a view to making provision relating to medical diplomas granted in the United Kingdom or Burma which is referred to in sub-section (1) of section 120 of the Government of India Act, 1935, the Medical Diplomas Act, 1939, has been enacted by the Indian Legislature.

As a result of negotiations with the General Medical Council that Council has accepted for recognition the medical qualifications granted by the British Indian Universities included in the First Schedule except Andhra University. The matter is under the consideration of the General Medical Council. That Council has also been informed of the recognition by the Medical Council of India of the qualification of M.C.P.S. (Bombay).

In view of the defects pointed out by the Inspectors of the General Medical Council regarding the qualifications granted by some of the Licensing Bodies in the United Kingdom, the Medical Council of India has recommended for the discontinuance of the recognition of such qualifications and the matter is receiving the attention of the Central Government.

As a result of the negotiations with Countries and States outside British India, the Council entered into schemes of reciprocity in some cases directly and in others through the General Medical Council, and in 1937, the Second Schedule was revised accordingly. In 1940, the Council did not favour indirect reciprocity, and on its recommendation, the Schedule was further amended whereby reciprocity now exists only with Malta, New Zealand and Burma. The question of mutual recognition of medical degrees between this Council and the South African Medical Council is under consideration of that Council.

In view of the existence of a state of war with Italy and Japan the medical qualifications granted in these countries are now recognised only when granted on or before the 10th October, 1940 and 8th December 1941, respectively.

The Council has proposed to the Central Government to set up a General Reciprocity Board for the purposes of facilitating reciprocity between India and various countries comprising the British Commonwealth of Nations as also for the purpose of removing by mutual discussion any difficulty in the way of establishing reciprocity with these countries and maintaining it when once established. The matter is being examined by the Central Government and the India Office.

It may be borne in mind that the Medical Council of India has to function both internally and externally within the four corners of the Act under which it has been constituted. It is neither an administrative nor legislative body. It cannot amend, alter or change its Act. Even for its finances it has to depend solely on the Central Government. Within its limitations the Council has been doing its best towards the attainment of efficiency at home and honour abroad.

APPENDIX I—FIRST SCHEDULE

Recognised medical qualifications granted by medical institutions in British India & approved by the Medical Council of India

Medical Institution	*Recognised medical qualification*	*Abbreviation for registration.*
University of Allahabad ..	Bachelor of Medicine & Bachelor of Surgery ..	B.M., B.S., All.
University of Bombay ..	Licentiate in Medicine and Surgery	L.M.S., Bom.
	Bachelor of Medicine & Bachelor of Surgery ..	M.B., B.S., Bom.
	Doctor of Medicine	M.D., Bom.
	Master of Surgery	M.S., Bom.
University of Calcutta ..	Licentiate in Medicine and Surgery	L.M.S., Cal.
	Bachelor of Medicine	M.B., Cal.
	Doctor of Medicine	M.D., Cal.
	Master of Surgery	M.S., Cal.
	Master of Obstetrics	M.O., Cal.
University of Lucknow ..	Bachelor of Medicine & Bachelor of Surgery	M.B., B.S., Lucknow.
	Doctor of Medicine	M.D., Lucknow.
	Master of Surgery	M.S., Lucknow.
University of Madras ..	Licentiate in Medicine and Surgery	L.M.S., Mad.
	Bachelor of Medicine & Master of Surgery	M.B., C.M., Mad.
	Bachelor of Medicine & Bachelor of Surgery ..	M.B., B.S., Mad.
	Doctor of Medicine	M.D., Mad.
	Master of Surgery	M.S., Mad.
Punjab University ..	Licentiate in Medicine and Surgery	L.M.S. Pun.
	Bachelor of Medicine	M.B., Pun.
	Doctor of Medicine	M.D., Pun.
	Master of Surgery	M.S., Pun.
	Bachelor of Medicine & Bachelor of Surgery ..	M.B., B.S., Pun.,
Patna University ..	Bachelor of Medicine & Bachelor of Surgery ..	M.B., B.S., Patna.
	Doctor of Medicine	M.D., Patna.
	Master of Surgery	M.S., Patna.
Andhra University ..	Bachelor of Medicine & Bachelor of Surgery ..	M.B., B.S., Andhra.
	Doctor of Medicine	M.D., Andhra.
	Master of Surgery	M.S., Andhra.
	Licentiate in Medicine and Surgery	L.M.S. Andhra.
College of Physicians and Surgeons, Bombay ..	Membership of College of Physicians & Surgeons, Bombay	M.C.P.S. (Bombay). (This will be recognised only when granted after the 30th April, 1944).

APPENDIX II—SECOND SCHEDULE

Recognised medical qualifications granted by medical institutions outside British India

Country	*Qualifications*		
UNITED KINGDOM	Registrable qualifications admitting primarily to the Medical Register granted by licensing bodies in the United Kingdom, as shown in Table 'F' set out in the Medical Register printed and published from time to time under the direction of the General Council of Medical Education and Registration of the United Kingdom in pursuance of the Medical Acts, 1858 and 1886.		
OTHER COUNTRIES	REGISTRABLE QUALIFICATIONS *Title*	*Nature of qualifications as stated on diplomas*	*Abbreviations*
AUSTRALIA—			
New South Wales—			
University of Sydney (d)	M.B. M.D. Ch.M.,B.S.	Medicine and Surgery	U. Sydney.
South Australia—			
University of Adelaide (a) (d)	M.B.B.S. M.D. M.S.	Do.	U. Adelaide.
Victoria—			
University of Melbourne (b)	M.B. M.D., B.S. M.S.	Do.	U. Melbourne.
BURMA—			
University of Rangoon	M.B., B.S.	Do.	U. Rangoon.
CANADA—			
Alberta—			
College of Physicians and Surgeons of the Province of Alberta (b)	Member	Do.	C. P. and S. Alta.
University of Alberta (b)	M.D.	Do.	U. Alberta.
College of Physicians and Surgeons of the Province of Manitoba (b)	Member	Do.	C. P. & S. Man.
University of Manitoba (b)	M.D., M.D., C.M.	Do.	U. Man.
North-Wests Territories—			
College of Physicians and Surgeons of the Province of North-West Territories (b) (When held in conjunction with License of the College of Physicians and Surgeons of the Province of Saskatchewan or the Province of Alberta)	Member	Do.	C.P. & S.N.W. Terr.
Nova Scotia—			
Nova Scotia Provincial Medical Board (a) (d)	L.M.S.	Do.	N. Scotia P.M. Bd.
Dalhousie University (a) (d)	M.D., C.M.	Do.	Dalhousie U.
Prince Edward Island—			
Prince Edward Island Medical Council (b)	L.M.S.	Do.	M. Co. P.E.I.
CEYLON—			
Ceylon Medical College (a) (d)	L.M.S.	Do.	Ceylon M. Coll.
HONG KONG—			
University of Hong Kong (a) (d)	M.B., B.S. M.D., M.S.	Do.	U. Hong Kong.
ITALY—			
All Royal Italian Universities (c) (e)	M.D.	Do.	..
JAPAN—			
All Imperial Universities (c) (f)	M.B. (Igakushi) M.D. (Igaku Hakushi)	Do.	..
Any Government or Prefectural special colleges designated by a Minister of Education of Japan (c) (f)	M.B. (Igakushi)	Do.	..

(a) The qualification must be included in Table (I) of the British Medical Register as published from time to time by the General Council of Medical Education and Registration of the United Kingdom.
(b) When granted on or before the 31st October, 1937.
(c) The qualification must be included in Table (J) of the British Medical Register as published from time to time by the General Council of Medical Education and Registration of the United Kingdom.
(d) When granted on or before the 31st March, 1942.
(e) When granted on or before the 10th October, 1940.
(f) When granted on or before the 8th December, 1941.

(Continued on page 377)

CORRESPONDENCE

The Editor is not responsible for any views expressed by contributors

CONSULTING PRACTICE

Sir,—I have read with interest Dr. Prem Lall's letter in the May issue of our Journal. I quite agree with him that specialisation having gone too far we are apt to lose sight of the man in the multitude of his organs. The expense of the various examinations is also to be reckoned with in a poor country. But is there any escape in view of the growing knowledge of science?

If the general practitioner develops an inferiority complex and considers himself a mere 'sorter' none else is responsible for it. It is his business to have a reasonable knowledge of every branch of scientific medicine besides a thorough one in general medicine. Consultants always have some respect for those from whom they get intelligent though awkward questions. One who knows his subject well need not feel small before a superior being. It is to be regretted that most of the attending physicians give ditto to whatever advise the consultant chooses to give even if it does not impress him, or what is worse still and prejudicial to the interest of the consultant, does not follow his instructions without letting him know about it. If the attendant is critical he can get much out of the consultant.

X-ray and laboratory examinations are not done at random. A provisional diagnosis has to be made before the patient is sent for these examinations to confirm that diagnosis, or sometimes as a check in certain treatment. It is up to the attending physician to disagree with his consultant. If he, for instance, considers the mischief to be in the gall bladder and the consultant wants skiagram of the appendix the attending physician is entitled to argue with the former and try to convince him.

As for the prescription quoted no body would be proud of it, but when a complete multi-dimensional diagnosis is made a somewhat lengthy prescription becomes sometimes unavoidable.

Now what after all is a consultant called for. When there is doubt about the diagnosis or when the attendant is uncertain about the prognosis the consultant is called in to suggest the proper line to be followed. It is dignified neither for the consultant nor for the attendant to let the former write out a prescription. He cannot replace the attending physician. As for the specialist he is only consulted on a particular organ and it is too much to expect him to give an exhaustive instruction.

Therefore it is no good criticising the consultant or the specialist. The general practitioner should try to cultivate confidence in himself which comes only by proper and systematic application of one's mind on his subject. I am etc.

3-6-46. N. C. Das Gupta, M.B.
Khulna.

CONSULTING PRACTICE, DOCTOR'S DILEMMA AND MEDICINES OF INDIAN MANUFACTURE

Sir,—A letter has been published in your paper for May, 1946 on page 284 under the heading "The Consulting Practice". What Dr. Prem Lal has written is true in a very large number of cases. I also know of some consultants who write about 8 or 9 injections and equal number of medicines to be taken by mouth and which instructions, if faithfully carried out, would probably amount to an injection every hour or so. I do not know how far such specialists are justified in this sort of advice. I leave it for your judgment.

There is another letter under the heading "Doctor's Dilemma". May I draw his attention to para 17 of the Ethical Rules of the I.M.A. which runs as follows:—

"There is no rule that medical practitioners should not charge one another for their services but it should be regarded as a pleasure and privilege to give one's services freely to a professional brother, his wife and children and to a medical student."

I hope this will satisfy his question.

There is another letter under the heading "Medicines of Indian Manufacture". It is very well to say that Indian manufacture should be preferred to foreign ones and I agree with the writer of the letter that we should give such preference provided the quality is the same and the Indian Medical Association has several times passed such resolutions as also the various medical conferences all over the country. But the manufacturers also must put their own house in order. Even the best known of our Indian firms are not immune from sending out inferior quality preparations or sending standardised preparations to begin with and then gradually reducing the quality. I can give several instances of this kind but I refrain from doing so for the present. My object in writing these few lines is only to caution the various Indian manufacturers that if they want Indian doctors to give preference to their drugs they must certify the quality of their drugs and at the same time maintain uniformity of standard. They must also keep the prices as competitive as possible. In addition the various Indian manufacturers must stop the habit of competing with each other by sending either inferior liver extracts or calcium preparations which are the only stock in trade of most of our firms. They must spend some money on research also and various firms should specialise in various directions so that they do not keep competing only among themselves. I am etc.

10-6-46. H. N. Shivapuri,
Lucknow. *Hon. Secy., U.P. Provincial Branch.*

DR. S. N. SEN GOLD MEDAL

In memory of his deceased son, Dr. S. N. Sen, B.SC., M.B. (CAL.), Kaisar-i-Hind of Jamalpur (Dist. Monghyr) E.I.Ry., has desired us to announce the offer of a Gold Medal for the best paper to be read at the 1946 session of the All-India Medical Conference to be held at Madura during Christmas week, on "INTESTINAL OBSTRUCTION AND OTHER COMPLICATIONS OF APPENDICITIS, HOW TO PREVENT AND TREAT SUCH COMPLICATIONS AND SAVE THE PATIENTS FROM THE CRUEL SUFFERINGS AND DEATH." The undersigned will be pleased to receive six typed copies of articles on the above subject from research workers and investigators. The last date of receipt of papers will be 30-9-46.

23, Hindusthan Buildings, P. B. Mukerji,
Calcutta. *Hony. General Secretary, I.M.A.*

REVIEWS

AVIATION NEURO-PSYCHIATRY—By R. K. Ironside, & I.R.C. Batchelor, 1945, Demy 8 vo. pp. 167. Published by E. & S. Livingstone Ltd., 16 & 17 Teviot Place, Edinburgh. Price 8*s*. 6*d*. net.

With the development of air warfare, aviation medicine has occupied a distinct place in the medical sciences. This little book is therefore both timely and interesting. It treats how to choose the personnel, how to prepare them for the job, how to prevent air-psychiatric problems and finally how to manage them. We enjoyed reading the book.

N. G. MOJUMDER

A HAND BOOK ON DISEASES OF CHILDREN—By Bruce Williamson, 4th Edition. 1945, Crown 8 vo. Pp. xii+ 382 with 81 illustrations. Published by E. & S. Livingstone Ltd., 16 & 17 Teviot Place, Edinburgh. Price 12*s*. 6*d*. net.

Bruce Williamson has once again brought up-to-date his popular work on children's disease. This little book will be particularly useful to undergraduates and general practitioners as it gives in short all the details without losing facts in verbosity.

N. G. MOJUMDER

PULMONARY TUBERCULOSIS—By R. Y. Keers, and B. G. Rigden, 1945, Crown 8 vo. pp. 268 with 193 illustrations. Published by E. &. S. Livingstone, 16 & 17, Teviot Place, Edinburgh. Price 17*s*. 6*d*.

This small handbook on Pulmonary Tuberculosis is primarily written for practitioners and students and as such deals with basic accepted facts only and avoids theories and problematical points. Many facts are made clear with very good reproduction of x-ray films. The chapters on treatment and prognosis are good. But after care is very perfunctorily treated. The subject of B. C. G. is also very summarily dismissed though this vaccine might occupy a distinct place in the future preventive programme. Nevertheless, it is difficult to get such a wealth of material in such a small compass.

N. G. MOJUMDER

OBITUARY

DR. MADAN M. DUTT, L.M.S.

Dr. Madan M. Dutta, L.M.S., an eminent physician and a member of the Calcutta Branch of the Indian Medical Association passed away on 28th June, 1946, at 4-30 A.M. He joined the Bengal Medical Service in 1905 after a brilliant academic career. His valuable researches on Indigenous Drugs while working as a Demonstrator of Physiology in the Calcutta Medical College won for him the Chandra Scholarship for 4 consecutive years. He held various responsible posts under the Government and retired in the year 1936 while Teacher of Physiology and Medical Officer-in-Charge of the

Outpatients' Department of the Campbell Medical School and Hospital, Calcutta. The Students Ward in the Campbell Hospital constructed on his initiative will ever remain as a memento of the intense love and sympathy he had for his students. A friend of the poor and of very amiable disposition, he was loved and respected by all who knew him. He had a keen interest in games and sports and was a founder-member of the Doctors' Amusement Club, Calcutta.

He is survived by his widow, an elder brother, four sons and a host of friends and admirers to mourn his loss.

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¶ Manuscripts for publication, books for review and correspondence relating to the editorial management should be sent to the Editor, JOURNAL OF THE INDIAN MEDICAL ASSOCIATION, 23 Hindusthan Buildings, Calcutta. Communications regarding subscriptions, reprints, etc., should be addressed to the Secretary, JOURNAL OF THE INDIAN MEDICAL ASSOCIATION, 23 Hindusthan Buildings, Calcutta.

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